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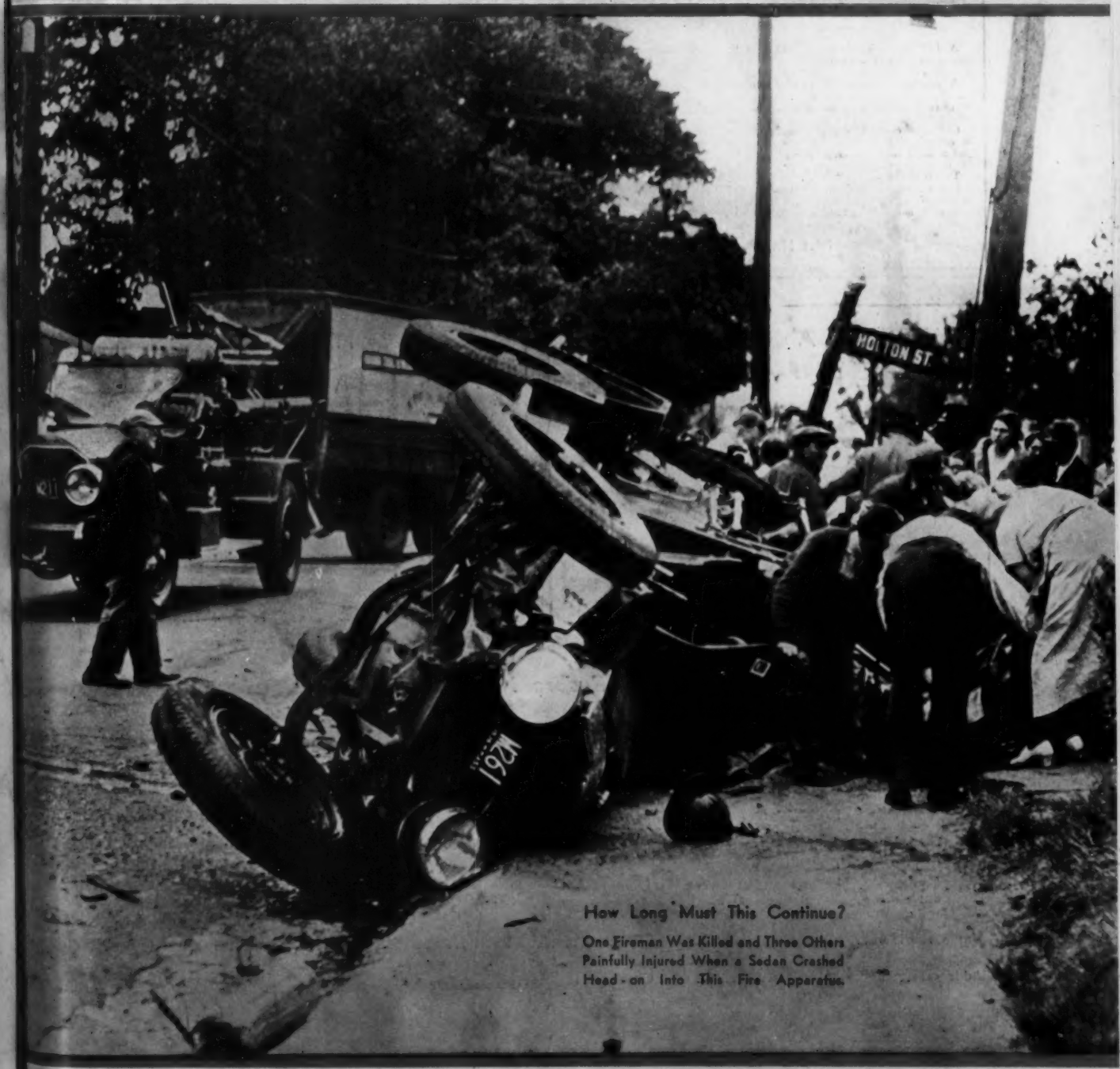
FIRE ENGINEERING

The Journal of the Fire Protection Profession Since 1877

Vol. 89, No. 11 NOVEMBER, 1936 Member A.B.C.—A.B.P.



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FIRE ENGINEERING

The Journal of the Fire Protection Profession Since 1877

ROBERT H. LOCKWOOD
Associate Editor

FRED SHEPPERD
Editor

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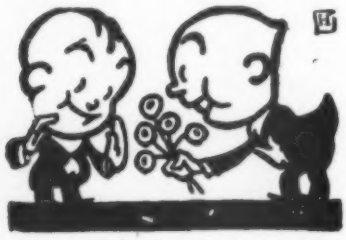
Assistant Editor



Orchids to the Manufacturers

DURING the past two or three years, manufacturers of fire apparatus have made great strides in the development and improvement of their products.

Despite depression difficulties and high costs of development work, they have gone ahead; and, as a result, the fire service today has available far better apparatus than even five years ago.

That progress is rapid is indicated by many signs. Hardly a single established manufacturer of apparatus can be found who is not building one or more closed-body fire trucks; revolutionary designs of high pressure, large capacity pumpers are being announced; even special trailer units for volunteer departments are in the making. Radical improvement in ladder truck design has taken place recently.

These are gratifying signs toward an improved fire protection service, and a real vote of confidence is due the manufacturers. Let us encourage them to more and greater improvements.

The Publishers

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Humorous Side of the Fire-Fighting Profession

MEMBER
Audit Bureau of Circulations
Associated Business Papers

Published the tenth of each month by
CASE-SHEPPERD-MANN PUBLISHING CORPORATION
Also publishers of "Water Works Engineering" and "Municipal Sanitation"
General Offices—24 West 40th Street, New York

SUBSCRIPTION PRICE
U. S. and Canada, $2 a year;
Foreign, $3; Single Copies, 25c.

KARL M. MANN, President
I. HERBERT CASE, Vice-Pres. and General Manager
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W. J. GIBSON, Advertising Manager
H. S. ESSEX, Production Manager

CHICAGO: 6 N. Michigan Ave.—W. S. CLEVENGER, L. M. ROCHE; SAN FRANCISCO: 444 Market St.—CHARLES H. WOOLLEY

Entered as second class matter April 15, 1929, at the Post Office at New York, N. Y., under the Act of March 3, 1879.
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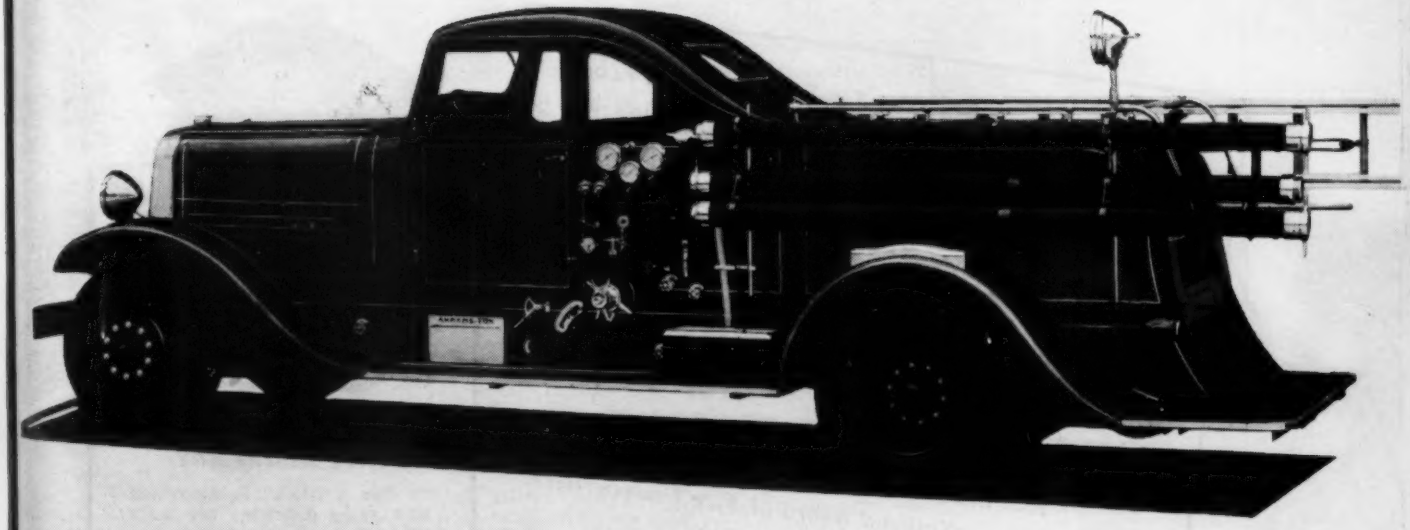

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Not too expensive for the smaller communities, yet *adequate* for any emergency, Ahrens-Fox apparatus has built up an enviable record for dependability. This is the year to modernize. This is the year to buy for the future. Investigate Ahrens-Fox equipment—*standardized or special*—it satisfies every requirement.

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What Price Delayed Alarms ?

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HUMAN LIVES LOST 100,000

INDIRECT FIRE WASTE . . . ? ? ? ?

THE National Fire Loss for Ten Years—1926-1935—Exceeded These Figures. Yet Nearly All Fires May Be Extinguished in Their Incipiency by a Bucket of Water.

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Why Gamble With Public Safety When Such Protection is Available?

FIRE ENGINEERING

The Journal of the Fire Protection Profession

Volume 89 NOVEMBER, 1936 No. 11

With the Editor

So What? There's an expression quite current today which usually follows a statement that does not end with a suitable or satisfactory conclusion: "So What?" But more about that later.

In an Ohio city last month fire destroyed a scrap rubber warehouse with a loss of about $120,000.

Information from reliable sources indicates that a number of hose lines were put out of service by bursting sections; also that some of the old apparatus at the fire performed very poorly and thus retarded the Fire Department in its work of fighting the blaze and keeping the loss down.

So What?

Well, what happened in that city may happen in many more today. Saving money on Fire Department maintenance can produce only one result: inefficient work. If apparatus that should have been junked years ago is still forced to do duty, if hose that has outlived its useful life is still in service, disastrous delays and interruptions occur and fire losses mount.

There's no cheap way of providing dependable fire protection, and there's no way of avoiding increased insurance costs if losses grow large.

To the problem there is one, and only one, solution: Spend the money necessary to keep the Fire Department modernized. Replace obsolete apparatus and unsafe hose with new.

Those Fire Departments which show the best results in keeping down fire losses are the ones that can get funds when needed for purchasing new apparatus and equipment.

Had the Ohio city provided new hose and apparatus needed by the Fire Department, it is possible that the city would not have lost one of its industries nor have had chalked up against its record a $120,000 loss.

Answering the question above, "That's What!"

* * *

Sugar Coated Pills Eddie Cantor, the radio comedian, broadcasting in the Texaco program, recently presented a little radio skit in his program which should have considerable effect in reducing false alarms. He dramatized in an entertaining, yet serious, manner the hazards incidental thereto. To his tremendous following of radio fans, particularly among the younger generation, he delivered a splendid little lesson on fair play with the Fire Department that is bound to bear fruit.

The ordinary lecture on safety is dry and uninteresting. But the sugar coated one, the one surrounded by good, wholesome fun, is easy to take and it hits the mark!

Fire Chiefs should encourage this kind of cooperation by writing the performer or his sponsor and offering commendation.

Fred Shepperd

How to Avoid Hazards in Combustible Gases and Liquids

Explosive Limits of Gases Vary Greatly and Must Be Determined for Each—Volatility of Liquids Is of Great Importance

By KENNETH A. KOBE
Assistant Professor, Department of Chemical Engineering,
University of Washington, Seattle, Wash.

THE many and varied uses of industrial gases makes it important that the characteristics of the numerous combustible gases be studied with regard to their flammability or explosiveness. Of even more widespread use are the volatile solvents used in paints, lacquers, metal and clothes cleaning, anti-freeze liquids, and many other purposes. The solvents vaporize into the air and become gases, so that the study of the flammability of gases gives the fundamental information on the entire system of gases and volatile liquids.

Combustible Gases

An explosive is a substance in which an oxygen-rich compound is mixed with a compound which is readily oxidized and large volumes of gaseous products of reaction result. The explosive force results from the extremely rapid liberation of the gases at a point of application. The explosive limits (or limits of flammability) of combustible gases is a very important piece of information regarding the particular gas. When a source of ignition is applied to a mixture of combustible gas and air, the entire mixture may burn slowly, or burn so rapidly that the result is an explosion, or may not burn after the source of ignition is removed. What determines which of these effects occurs? The amount of combustible gas mixed with the air is the determining factor. A flame spreads through such a mixture when enough heat is given off from the burning layer of gas surrounding the point of ignition to cause the ignition of the adjacent layer of gas and thus the flame is propagated throughout the gas mixture. The smallest percentage of combustible gas in air that will allow the flame to propagate itself is the lower explosive limit. An increase in the percentage of combustible gas will cause a greater liberation of heat for a given volume, the flame will propagate more rapidly and greater explosive violence will result. If the percentage of combustible gas continues to increase, it finally becomes so great that the amount of oxygen in the mixture is insufficient to cause enough combustion to liberate the heat necessary for continued ignition and the flame will not propagate. This is the upper explosive limit.

It must be kept in mind that the gas-air mixtures outside the explosive limits are combustible when a source of ignition is constantly maintained, but the combustion of the mixture will not support itself or propagate the flame when the source of ignition is removed.

The explosive limits must be experimentally determined for each combustible gas. They vary widely, depending upon the amount of heat liberated in the combustion of the mixture and its temperature of ignition. Table I gives the explosive limits for a number of the common gases, and some common solvents and refrigerants.

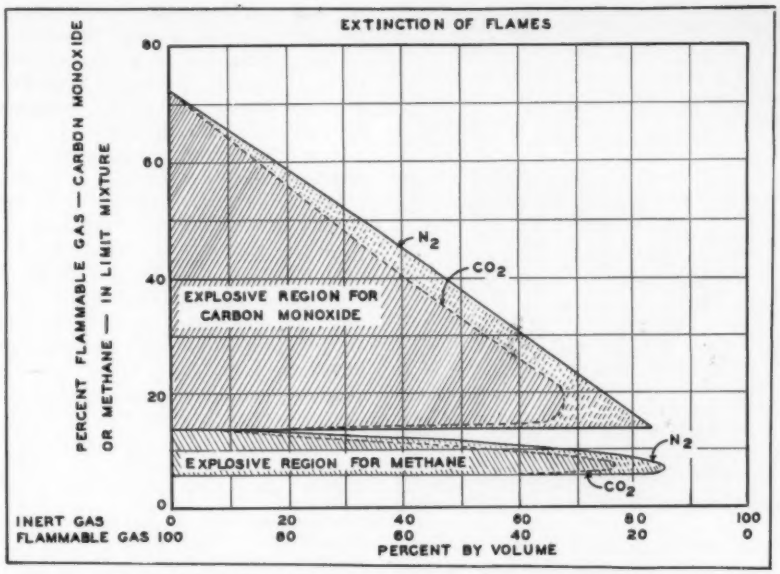
Table I

Gas	Formula	Limits, per cent by volume lower	upper
Hydrogen	H_2	4.1	74.0
Carbon monoxide	CO	12.5	74.0
Acetylene	C_2H_2	2.5	...
Illuminating gas.		7.0	21.0
Methane	CH_4	5.3	14.0
Ethane	C_2H_6	3.1	12.5
Propane	C_3H_8	2.4	9.5
Butane	C_4H_{10}	1.9	8.4
Gasoline	.....	1.4	6.0
Benzene	C_6H_6	1.4	8.0
Methyl alcohol..	CH_3OH	6.0	...
Ethyl alcohol....	C_2H_5OH	3.0	19.0
Ethyl ether.....	$(C_2H_5)_2O$	1.7	...
Ammonia	NH_3	16.0	27.0
Methyl chloride..	CH_3Cl	8.1	17.2
Ethyl chloride...	C_2H_5Cl	3.7	12.0
Methyl formate..	CH_3OOCH	4.5	20.0

When an inert gas such as carbon dioxide (CO_2) or nitrogen (N_2) is

Cigar Lighter and Gas Fumes Combined to Cause This Explosion

A former tenant had failed to turn off the gas heater, and when the new occupant snapped on his cigar lighter the resulting explosion caused the destruction shown in the picture.



Extinction of Carbon Monoxide or Methane Flames by Carbon Dioxide (CO_2) or Nitrogen (N_2)

mixed with the combustible gas, the explosive limits are changed.

Graph I shows the effect of mixing inert gases with carbon monoxide or with methane. Carbon monoxide is one of the important constituent of illuminating gas, blast furnace gas and products of incomplete combustion. Methane is the principal constituent of most natural gases. The explosive limits of the pure flammable gas mixed with air are shown on the left hand scale, thus for carbon monoxide the upper limit is 74.0 per cent and the lower limit 12.5 per cent, for methane the upper limit is 14.0 per cent and the lower 5.3 per cent. As the percentage of inert gas is increased, the lower limit remains about the same, but the upper limit decreases rapidly due to the replacement of oxygen of the air by the inert gas. Carbon dioxide is more effective in decreasing the explosive limits because more heat is required to raise its temperature than is required for nitrogen. A knowledge of these factors is of value as it permits the calculation of correct mixtures of gases that may be used as combustible gases, but that are not explosive.

The Pittsburgh gas holder explosion on November 14, 1927, is a horrible illustration of the destructive power of the explosive mixture of natural gas and air. Twenty-eight lives were lost and property damage of $10,000,000 resulted. A gas holder was being repaired and the gas was swept out with an insufficient amount of air, so that an explosive mixture remained in the holder. When an oxy-acetylene torch was applied to the holder, the gas mixture ignited and thirteen men on the holder were instantly killed and few traces of them ever found. Two nearby gas holders were demolished and the gas burned. Proper precautions concerning the explosive limits would have prevented this catastrophe.

The propagation of the flame depends upon the successive ignition of layers of the combustible mixture. Thus the flame moves through the mixture at a certain rate. This rate of flame propagation is characteristic of the particular combustible gas and also the percentage of it in the gas-air mixture. Hydrogen burns more rapidly than any of the other gases. At its lower explosive limit the flame moves about 17 inches per second. The rate rapidly increases as the amount of hydrogen in the mixture increases, reaching a maximum rate of 197 inches per second at 38 per cent hydrogen in the mixture. The rate then decreases to about 20 inches per second at the upper explosive limit. The hydrocarbon gases, as methane, ethane, etc., all burn at about 8 inches per second at the lower and upper limits with a maximum rate of about 28 inches per second for the midpoint of the explosive range. The maximum explosive effect is found when the flame travels most rapidly.

Combustible Liquids

The many new organic solvents being introduced into the paint and lacquer field as well as the widespread use of petroleum solvents make important the fire hazard caused by their use. The Underwriters Laboratories have divided the liquids into four classes depending upon the most important of the hazardous properties of the liquid. Pure ether is rated as 100.

General Classification	Numerical Scale
Ether class	110-100
Gasoline class	100- 90
Kerosene class	40- 30
Paraffin Oil class	20- 10

The volatility of the flammable liquid is of greatest importance as it is a measure of the ability of the liquid to vaporize and mix with the surrounding air. This gives a certain concentration of combustible which will eventually exceed the lower explosive limit and be a source of extreme danger. Also, the vapors of all these liquids are heavier than air and tend to sink to the lowest level and build up in a dangerous concentration.

The danger of this condition is apparent from the records showing the numerous and disastrous fires resulting from home dry cleaning where the explosive gas mixture had moved a considerable distance to a source of ignition. Unfortunately, the lower explosive limit is much lower for these vapors than for gases, so that a small concentration (only 1.0 to 1.5 per cent) is sufficient to give an explosive mixture.

Tragedies from Home Cleaning

No city has been free from some

Fighting Fire in an Exploded Oil Tank

Fire of undetermined origin broke out in this oil tank in a large refinery, causing the tank to explode. Many homes in the vicinity were endangered and some of the huge tanks of the company were threatened.

Static Electricity and Gasoline Fumes Make a Bad Combination

When the filling hose was being withdrawn a spark ignited the gasoline fumes and the result was the loss of $900,000. All of the tanks shown in the illustration were destroyed, as the contents in one after the other ignited. Two employees of the filling station were badly burned.

human tragedy due to home cleaning accidents. The frightful burns that can result from ignited cleaning naphtha are well known to all. The terrific explosive force of gasoline-air mixtures are illustrated by the complete demolition of a nine room home in Toronto in which curtains were being cleaned in gasoline in a washing machine in the basement. The agitation in the washing machine generated large quantities of gasoline-air vapors, which were finally exploded by an electric spark.

In order to reduce the fire hazard from volatile dry cleaning solvents, common practice is to add carbon tetrachloride until the vapors are no longer flammable. This is exactly the same as adding an inert gas to the combustible gas to change the explosive limits. Carbon tetrachloride is usually more volatile than the hydrocarbons in the solvent so a small proportion of it in the liquid gives a much greater proportion in the vapor phase.

No explosion hazard exists at ordinary temperatures with oils in the kerosene and paraffin oil groups, as the volatility of the oil is too low to give sufficient vapors to exceed the lower explosive limit. If the temperature is increased, then volatility also increases and the explosive limit can be exceeded. An excellent example is the repair of a tank on a fuel oil truck which exploded after an oxy-acetylene torch was used to repair leaks. A small amount of volatile fraction in the heavier fraction may slowly evaporate and give an explosive mixture, so that whenever a closed vessel has contained a petroleum fraction precautions should be taken to insure that no flammable vapors remain in the vessel when a flame is to be applied.

Ignition of the Flammable Mixture

The flammable mixture of gas or liquid vapors and air may be ignited in a number of ways. An open flame is always sufficient. This is employed in the safety lamp where the bulk of the explosive mixture is separated from the open flame by a fine wire netting. The gas-air mixture inside the screen ignites and gives warning of the presence of an explosive mixture. Various patented apparatus are also on the market to show the presence of combustible gases.

The temperature of ignition is an important characteristic of gases and liquids. Table II is taken from some results of the Underwriters Laboratories on compounds in common use as refrigerants. If the gas or liquid were discharged against a hot surface, ignition would occur if the surface were at a sufficiently high temperature.

Table II. Apparent Ignition Temperature

	Ignition Temperature °C.	Ignition Temperature °F.
Ethane	510	950
Propane	466	870
Butane	430	806
Gasoline	280	536
Illuminating Gas	590	1094
Ammonia	651	1204
Methyl chloride	632	1170
Ethyl chloride	519	966
Methyl formate	456	853

The temperatures given are only relative as there may be wide variations among the results of different workers due to the use of different test methods, different hot surfaces and other factors.

Static electricity is a very common cause of ignition, especially in home dry cleaning fires. Whenever two dissimilar materials are in contact, there is a difference in electrical potential and if the surfaces are separated, the potential may become great enough so that a spark will pass be-

Sixteen Lives Were Lost in This Celluloid Fire

It is thought that hot ashes from a cigarette in a workman's hand caused the terrific chemical-celluloid explosion in this plant, which was engaged in the manufacture of box toes for shoes. A mother and five children were killed by a flare of flame which enveloped their nearby home; the remaining deaths were among the plant employees.

tween them. When a liquid flows in a pipe, static electricity is generated. All such sources of static electricity where flammable gases or liquids are present, should be grounded so that static charge can escape to the ground. Rooms in which machinery operates with flammable liquids should have a high humidity, as this prevents the accumulation of static charges. The introduction of tools that will not produce sparks when used on steel surfaces is very recent. The use of copper containing a small percentage of beryllium gives an alloy almost as strong and hard as steel, so that chisels can be made to cut off rivet heads in an explosive atmosphere without fear of sparks from the tools.

Summary

Whenever combustible gases or volatile organic solvents can mix with air, the mixture may enter the explosive region. A source of ignition will cause the self-sustained combustion of the mixture, the rate of combustion varying from a relatively slow movement of flame to a violent explosion. The various factors influencing the explosive limits and means of ignition have been discussed.

(From a paper read before the annual Northwest Fire College.)

NEW ENGLAND CHIEFS TO CONVENE NEXT YEAR AT THE BALSAMS, N. H.

Convention Hotel with Ample Facilities for Recreation and Sports Located at the Picturesque Dixville Notch

By Harry Belknap

THE 1937 Convention of the New England Association of Fire Chiefs will be held at The Balsams, Dixville Notch, N. H., on June 22 to 24. This was decided at a meeting of the officers and Board of Directors which was held in Nashua, N. H., on October 15.

Chief Carl D. Stockwell, Burlington, Vt., President of the association, and Chief John W. O'Hearn, of Watertown, Mass., Secretary-Treasurer, conducted the meeting. Others present were Chief Joseph W. Randlette, Richmond, Me., First Vice-President; Chief Charles H. French, Manchester, N. H.; Chief Oliver T. Sanborn, Portland, Me.; Chief Augustin J. Cote, Woonsocket, R. I.; Chief Alfred H. Koltenski, Rutland, Vt.; Chief Michael W. Lawton, Middletown, Conn.; Chief William T. Happny, Concord, N. H.; Chief Albert C. Melendy, Nashua, N. H.; Chief Fred M. Sargent, Sunapee, N. H.; Harry Belknap, Boston, Mass., Press Representative; and Frank Doudera and G. J. Cullum, of The Balsams.

The motion to hold the convention at The Balsams was made by Chief French and seconded by Chief Cote, after Chief Melendy had issued a most cordial invitation for the Chiefs to come to New Hampshire, and Mr. Doudera had described The Balsams, a summer resort hotel beautifully situated on a lake, with facilities for sports and recreation of all kinds.

There is a 300-car garage adjacent to the hotel which will be used as an exhibit hall. This garage is about 150 feet long and 70 wide and is of concrete construction. Above the garage there is a convention hall with seating capacity for 600 persons.

The following committees were appointed: Exhibits — Chiefs Melendy, French, and Arthur W. Spring, of Laconia, N. H.; registration—Chiefs Sanborn, Koltonski, and Happny.

A sports program and banquet will be features of the convention. The list of speakers and topics and subjects for round table discussion will be announced later.

Secretary O'Hearn reported that since the last meeting of the Board of Directors the following deaths had occurred: Chief Arthur P. Woodward, Danielson, Conn.; Chief John J. Luby, Wallingford, Conn.; Chief Frank R. Harrison, Onset, Mass.; Honorary Deputy Chief Robert H. Mainzer, New York City, and Herman Fernberger, of Philadelphia, Pa., an associate member.

Conley Out—Graves In

Politics are again in full swing at Pittsburgh, Pa., and as a result, following the resignation of Mayor William McNair, the recently appointed Chief Louis J. Conley was ousted and Battalion Chief William M. Graves is again Acting Chief. Chief Graves served as head of the department during the period between the retirement of Chief Richard Lee Smith and the appointment of Chief Conley.

The appointment of Chief Conley was only announced in the previous issue of FIRE ENGINEERING. With various political factions trying to secure control, it is difficult to foretell what future changes will be made in the department.

Maine Chiefs Meet

A quarterly meeting of the State Association of Fire Chiefs of Maine was held on September 16 in the new fire station in Norway, Me. Victor Partridge, Chairman of the Board of Assessors, welcomed the visitors. Luncheon was served in the fire house and the Chiefs visited the South Paris Fair in the afternoon. A banquet and round table discussion were held in the evening. HARRY BELKNAP.

Greenwood Has Active Week

An active fire prevention week was arranged by Chief G. T. Haskins, Greenwood, Miss., the Chamber of Commerce, and other interested agencies.

At least one fire prevention article was published in the local newspaper each day, together with editorials on the subject. Chief Haskins gave talks before the local schools, and the Fire Department distributed posters in the business district. Complete inspections of buildings in the fire district were made during the week.

To date, the city has answered ninety-six alarms with a total fire loss of but $3,314. Plans are being made to follow up the educational work started during Fire Prevention Week.

The Ever-Present Danger During the Conveyance of Gasoline

The driver of this gasoline truck had just pulled into a service station at Paramus, N. J., to discharge his cargo, when he discovered a small flame spouting from the side of his vehicle. He leaped to safety, and in another moment the truck exploded.

A New Development in Resuscitation

Newly Discovered Nielsen Method, of Danish Origin, Increases Depth of Breathing and Lessens Number of Respirations

By RALPH H. SNYDER
State Safety Representative, WPA, Okmulgee, Okla.

A DANISH sports inspector, Holger Nielsen, has recently made public the details of his discovery of a far more efficient method of artificial respiration which Danish authorities affirm surpasses the universally used Schaeffer method, which has become internationally recognized as a standard technique in saving lives in cases of drowning, electrical shock, gas poisoning, and suffocation. The Schaeffer method was first advanced by Sir Edward Sharpey Schaeffer, F. R. S., in 1903, and was approved in 1927 by practically all American First Aid and Life Saving institutions and industries.

Technique of the Schaeffer Method

The two systems are similar only in respect to the general posture of the patient's body. For in the position of the operator, in his movements and in his speed of working they differ radically. In the Schaeffer method the operator kneels astride and faces toward the head of the patient, who lies face downward with his head resting on one arm with the other arm extended directly overhead, elbow bent. The operator's hands are placed on the back with fingers resting on the ribs, the little finger just touching the lowest rib. The body is then swung forward throwing the weight of the operator on the lower ribs, compressing the chest and expelling the air. This position is held for two seconds and then quickly and smoothly released producing a quick intake of breath. In two seconds the pressure is again applied. This gives a complete respiration in four or five seconds and twelve to fifteen times a minute.

Method Does Not Insure Deep Breath

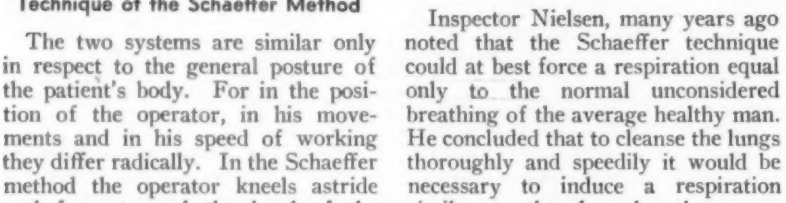
Inspector Nielsen, many years ago noted that the Schaeffer technique could at best force a respiration equal only to the normal unconsidered breathing of the average healthy man. He concluded that to cleanse the lungs thoroughly and speedily it would be necessary to induce a respiration similar to the deep breath a man takes when he expands his chest to its fullest capacity. It is difficult to apply a method of forced respiration to an unconscious person and obtain the maximum evacuation of air because breathing is a purely mechanical function and the lungs will accept only so much air as the method employed will force them to take.

To take into consideration that it took science 300 years to seemingly perfect forced respiration, it is easy to realize the full enormity of the task Holger Nielsen set for himself. But the close observation of this sports inspector caused him to note the deficiency of the present approved method and from that observation build the new method from years of patient research.

What the Nielsen Method Accomplishes

With the Nielsen method the operator kneels at the head of the patient, instead of astride his hips, puts pressure on the shoulder blades instead of lower down on the rib structure, and at the conclusion of each pressure permits his hands to slide to the patient's arms and raises them very slightly. By this small action, seemingly inconsequent, the operator removes the weight of the patient's body from his chest and makes it expand so greatly as to cause the lungs to accept almost double the quantity of air that can be taken under any other method. This slight lift also lessens the number of forced respirations to the minute, but causes an increase in the depth of each breath of a full ninety per cent over the Schaeffer method.

This gives artificial respiration a hitherto undreamed of efficiency by (1) evacuating the lungs more completely and rapidly of all toxic and noxious substances: (2) furnishing the blood with more oxygen (3) causing the natural process of breathing to be set up correspondingly faster, and (4) by eliminating the danger of injury to internal abdominal organs which sometimes occur with the Schaeffer method when the



Position No. 1, Nielsen System of Artificial Respiration
Operator places his hands with outstretched fingers on patient's back, so that his palms are just on the shoulder blades and the wrists just over the top edge.

Position No. 2, Nielsen System

The first movement is then started by swinging his body forward, swinging freely at the hips, with the arms straight and stiff. He moves slowly with progressive pressure. The pressure is made only by the weight of the operator's body alone. He must be sure that his movement of pressure shall be free of muscular force. Continue pressure until arms are quite vertical. Operator holds this position while he counts—"one, two, three, four," and on "four" he releases pressure by swinging his torso backward.

patient is a child or young woman and the operator is a big husky, who thinks it is necessary to throw all of his weight onto the victim.

Inventor Consulted Famous Scientist

When he had perfected his system the inventor turned it over to Professor Arnold Krogh, Nobel Prize winner of the Rockefeller Institute in Copenhagen, an investigator famous for his researches on the respiratory processes.

Professor Krogh tested it exhaustively, on actually insensible persons, and after his tests gave the method his unqualified endorsement. Following Professor Krogh's approval the method was investigated by a commission of men drawn from the faculty of medicine of the University of Copenhagen, the State Board of Public Health, the Danish Red Cross, the Danish Life Saving Association and other interested organizations.

Taking the Schaeffer method to represent 100 per cent efficiency, the board found that the Nielsen method was 141 per cent efficient. Too, the Nielsen method afforded a greater number of breaths per minute, deeper breaths and greater ventilation of the lungs per minute than any other tested method.

Immediately after this approval the Danish First Aid and Life Saving organizations formally adopted the new method and urged its widespread use on all bathing beaches and in all industries.

Details and Rules of the Nielsen Method

Many of the minor details of the treatment, chiefly in regard to caring for the patient before and after artificial respiration is applied, are similar to the present used Schaeffer method. However, complete details and rules follow for the readers who may not be familiar with the Schaeffer method.

1. If rescuer is alone, he shall start resuscitation immediately, and shall send for a doctor or ambulance only when someone else comes that he can send.

2. Quickly loosen all garments restraining breathing, such as tie, collar, vest, etc.

3. Lay patient down on a hard flat surface. If surface slopes, keep head at lowest point. Bend patient's arms at elbows, cross hands flat one over the other and place directly under the patient's forehead. Place handkerchief or shirt under hands and face to keep dust from entering and to keep nose and mouth clear of the ground.

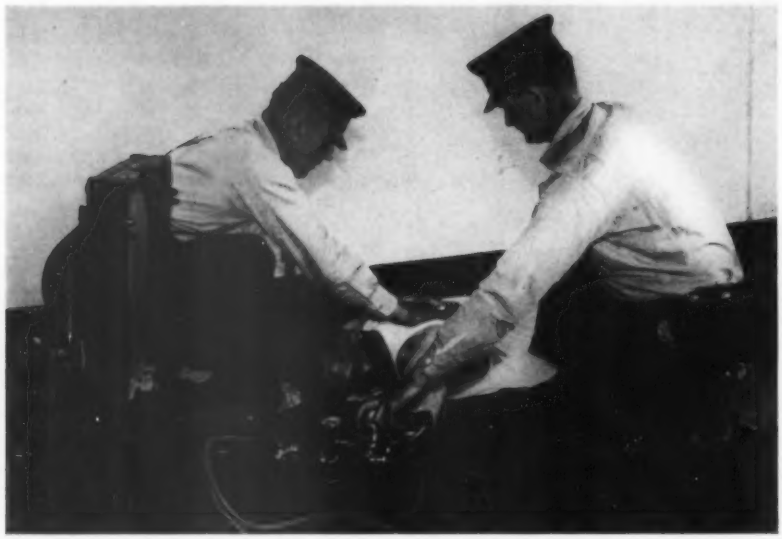
4. Operator then stands at head of patient and places one knee near head on a folded coat or cloth, and places his other foot near patient's elbow.

5. Kneeling thus, slap the patient heavily with the flat of the hand between the shoulder blades two or three times to make the tongue fall forward. If tongue does not fall forward, it is then necessary to open the mouth and draw it forward. At all times must the tongue remain forward and downward. Also remove any obstruction that may be in the mouth such as false teeth, weeds, chewing tobacco, etc.

6. Operator then places his hands with outstretched fingers on patient's back so that his palms are just on the

Position No. 3, Nielsen System

On swinging backward the hands are moved along the patient's shoulders and arms, until he can grasp the middle of the patient's upper arms. He now swings slightly backward, causing the patient's arms to "lift" a little. Only the arms move in this second half of the movement, the head and the torso of the patient remain undisturbed. The arms are held in this lifting position while the operator continues the count—"five, six, seven, eight." At "eight," the operator returns his hands to the first position and repeats the whole movement.



Using the Inhalator with the Nielsen Method of Artificial Respiration

shoulder blades and the wrists just over the top edge. The first movement is then started by swinging his body forward, swinging freely at the hips with the arms straight and stiff. He moves slowly with progressive pressure. The pressure is made only by the weight of the operator's body alone. He must be certain that his movement of pressure shall be free of muscular force. Continue pressure until arms are quite vertical. Operator holds this position while he counts—"One, two, three, four," and on "four," he releases pressure by swinging his torso backward.

7. On swinging backward the hands are moved along the patient's shoulders and arms until he can grasp the middle of the patient's upper arms. He now swings slightly backward causing the patient's arms to "lift" a little. Only the arms move in this second half of the movement, the head and the torso of the patient remain undisturbed.

8. The arms are held in this lifting position while the operator continues the count—"Five, six, seven, eight." At "eight," the operator returns his hands to the first position and repeats the whole movement.

9. Repeat these double movements seven to eight times a minute.

10. Keep the patient warm. If help is at hand, have him covered with blankets or coats.

Basis of Method Is Form and Rhythm

The treatment must not be given up until at least four hours of steady, unremitting resuscitation has been tried, unless, of course, the patient commences to breathe strongly and naturally of his own accord. The basis of the method is form and rhythm.

In most of the large cities today, the ambulance companies and Fire Departments are mostly equipped with some type of lung motors or inhalators. Their only advantage is the fact that a mixture of carbon dioxide and oxygen is carried and given to the patient.

Pure oxygen does not stimulate breathing. For this reason a mixture of about ninety-three per cent oxygen and seven per cent carbon dioxide is used in the inhalator. The carbon dioxide content stimulates the breathing center in the brain and causes the patient to breathe more deeply, thus allowing the oxygen to drive the carbon monoxide rapidly out of the blood. The carbon dioxide also aids in keeping breathing from stopping.

Functions of Inhalator

It should be understood that the inhalator is an aid to resuscitation and does not take the place of the prone pressure method.

Old type pulmotors or lungmotors of the pump type that uses air are as obsolete as a 1912 Ford, and have undoubtedly killed more people than they have ever saved. They should never be used under any circumstances.

Report Received

Maritime Fire Chiefs' Association—Proceedings of the twenty-second annual convention of the Maritime Fire Chief's Association, held at Kentville, N. S.; Sixty-four pages, illustrated.

Underwriters' Laboratories Described

C. W. Roulon, of New York, gave an interesting talk on the Underwriters' Laboratories at a joint meeting of the engineering section and fire prevention division of the Massachusetts Safety Council at the Boston Chamber of Commerce on the evening of October 21. Prior to the meeting a visit was paid to the headquarters of the Boston Protective Department, at Broad Street and India Square, to inspect the new enclosed salvage wagon recently placed in service. Alfred N. Miner, Vice-President of the Safety Council and a Director of the Protective Department, acted as host, assisted by Acting Superintendent C. W. Gooding. A banquet was held at the Chamber of Commerce. In addition to Mr. Roulon's talk, there was an address by W. Graham Cole, Director of Safety, Metropolitan Life Insurance Company. HARRY BELKNAP.

Chief Payne and Mechanic Killed

Chief E. B. Payne, forty-four, head of the North Platte, Neb., department, and Francis Fitzgibbons, his mechanic, were killed following an accident when a car crashed into the Chief's coupe while on the way to answer a fire alarm. Both men died shortly after being removed to the hospital.

The car in which the Chief was riding turned over several times after it was struck. It is believed that both men were thrown from the coupe as it turned over.

Chief Payne joined the volunteer department in 1922. Eleven months ago he was elected Chief and was appointed head on July 16. Last spring he attended a short course for firemen in Ft. Collins, Col., and when he returned he started a school for the local firemen. He was instrumental in constructing a drill tower.

The car which caused the accident was found to have faulty brakes.

Insignia for Firemen's Cars

A great deal of confusion has existed since a law was passed in New York State forbidding the letters "Fire Department" or "Fire," on any vehicle of a fireman, that was not owned by the department. Volunteer firemen felt that the removal of such a distinguishing mark slowed up their response to fires.

An opinion has been given by the Attorney General of the state, and reiterated to Seth T. Cole, Chairman of the Law Committee, Firemen's Association of the State of New York, in which he suggests the display of a six-inch Maltese cross on private vehicles of volunteer firemen. The opinion states:

"As I read the provision of Section 958, I should say that a volunteer fireman might lawfully use on his personally owned automobile an insignia or emblem indicative of his membership in the volunteer fire company of which he is a member, provided such insignia or emblem avoids the specific words barred by the section and is divorced from any wording or lettering indicating that the automobile is a Fire Department vehicle."

N. Y. Firemen Win 8-Hour Day

Overwhelming Approval Given to Measure by New York City at General Election—3,200 Officers and Men Will Be Added Eventually

By WM. JEROME DALY

VOTERS of the City of New York, in the general election on Tuesday, November 3, gave fire fighters of the metropolis the legal right to an eight-hour working day, more popularly referred to as a Three-Platoon System. They voted on a referendum question which was one of five questions on the voting machine. It read:

"Shall the three platoon system for Officers and Members of the Fire Department of the City of New York be adopted?"

There were 1,407,674 affirmative votes and 442,616 votes in the negative—a ratio of three and a half to one in favor of the question.

The law requires the Fire Commissioner to institute the three platoon system on January 1, 1937, but it also gives him the latitude of three years (December 31, 1939) in which to completely install the Three Platoon system throughout the Fire Department, which has been operating under a Two-Platoon system since 1919.

It is calculated that by the end of the next three years about 3,200 officers and firemen will be required in addition to the present force of 6,500 fire fighters of all ranks. It will cost approximately $10,000,000 in salaries when completely installed. It will give steady empoyment to thousands of young men who are not now continuousy employed.

United Campaign

The victory which the New York firemen won was the culmination of a long and arduous campaign which extended over several years. The campaign was waged by the Uniformed Firemen's Association—the blueshirts of New York, in which they had the wholehearted co-operation of the Lieutenants, Captains and Chief Officers Association.

Last winter the State Legislature passed the bill at Albany. The Governor of the State signed the measure which submitted the question to the voters. The referendum question was attacked in the courts by the Citizens Budget Commission—a privately operated organization of business men, bankers, realtors and reformers—on the legal technicality that the submission of such a question to the voters was unconstitutional for the reason that it was purely a local New York City matter which could be disposed of in the Municipal Board of Estimate and Apportionment, and on the further ground that the Governor signed the measure without any emergency message from the Mayor of New York. All of these, they said, were in contravention of Home Rule. The litigation reached the Court of Appeals of the State. That tribunal decided in favor of the objectors and ordered the question stricken from the ballot or voting machine, on Tuesday, October 13—three weeks before Election Day.

Election Saves Referendum

The fire fighters were depressed. Their hopes had been dashed to pieces on the technical rocks in the law books of the State. The Mayor of New York and the Fire Commissioner put their heads together and decided to pour soothing oil on the troubled waters by adopting a schedule of duty which would eliminate from the firemen's work-a-day-world the twenty-four hour day on duty once a week. That continuous day had been the chief bone of contention for years among the firemen. This ray of sunshine seemed to placate the firemen. In fact, not a few of them suggested that the elimination of the twenty-four hour day and the restoration of their salaries from $2,810 to $3,000 a year would heal the wounds, but luck was just around the corner, and here is what it was.

An unprecedented registration of 2,600,000 voters in the City of New York in a Presidential year indicated that such a number of voters could not possibly cast their votes between the hours of 6 a. m. and 6 p. m. on Election Day. The Board of Elections of the City of New York petitioned the Governor of the State to convene the Legislature for the purpose of extending the voting period three hours—until nine o'clock at night. The Governor, who was a candidate for re-election, proclaimed that an emergency existed and in issuing a call to the Senators and Assemblymen to convene in Albany for that purpose, he included in his message the urgency of also reconsidering the firemen's three platoon legislation, citing that the measure had been ruled off the ballot through a technicality. The Legislature responded with a will. The Governor delivered his emergency message—having in the interim conferred with the Mayor of New York—and the Legislature, fortified this time with an emergency message from the Governor, repassed the firemen's bill along with the extension of the voting hours. The Governor signed both bills and the three-platoon referendum question went back on the ballot with full protection from any further danger of legal inhibitions.

A new enthusiasm swept over the firemen and their supporters. The literature, the posters, the placards, the motion picture trailers and all of the other one hundred and one forms of advertising which had been put in storage for next year's campaign, were taken out and circulated widely.

Politics Avoided

Then the opponents of the measure attacked it from the economical viewpoint, citing that the city was not financially able to meet the exactions of such a burden on the taxpayers. The firemen and their friends never wavered. They continued on with one of the most dignified and decorous campaigns ever waged by the so-called working class. They studiously avoided the bickering and recrimination that usually go with political issues. Rather they urged all along that it was a welfare issue; a matter of humanity, justice and fair play. They resorted to such arguments as the home, wife and children. They carefully kept clear of politics.

The newspapers of New York were divided on the question and those that were opposed, editorially attacked the measure time and again until Election Day. The civil service

workers, such as policemen, teachers and all others in governmental employ were in favor of the firemen. The larger civic bodies, such as Chambers of Commerce, Boards of Trade, taxpayers' associations and merchants groups were bitter-enders.

The Mayor Votes "Yes"

Mayor La Guardia, on the day before Election Day, came out on the plaza of the City Hall at noon. Commissioner McElligott presented to him Fireman Vincent J. Kane, the president of the Uniformed Firemen's Association. Mr. Kane asked the Mayor publicly if he would please vote "YES" on the referendum for an eight-hour working day for the fire fighters of New York. The Mayor mounted a huge fire engine and into a portable microphone of the City's radio station he told the world that he would vote for the three-platoon system and then he complimented the firemen and thanked them for having conducted a dignified and well-mannered campaign. Five hundred fire fighters (off duty), standing at attention, in full uniform, forgot their military training and applauded. Then behind the Fire Department Band they marched in review. The outcome had never been in doubt. It was only a question of by how much the issue would win.

On Election Day, the firemen never relaxed in their vigilance. Every one of the 3,799 Election polls in the city had a fire fighter, or his father, or his brother or his son on the job. The result attained was by far greater in the number of favorable votes than any of the other four referenda on the voting machine. The firemen's cause ran far ahead of all other questions submitted, such as Charter Revision, Constitutional Convention, Proportional Representation, and the State Debt for Relief of Unemployment.

Statement by Kane

Fireman Kane issued the following statement of gratitude:

"New York Firemen are grateful to the voters for this splendid tribute. We will do all in our power to be worthy of it. We have always given our best to the service, but we believe we will be even more efficient—and certainly happier—under the eight-hour day provided.

"We wanted all the voters to know just what the three-platoon system meant to them and to us. After the greatest educational campaign ever waged in New York—clean, honest and sincere—we feel sure that they do. The remarkable vote shows how they feel about it.

"To the thousands of friends who aided in securing passage and adoption of this great forward-looking legislation, and in educating the voters to its worth and benefits, we extend our sincere thanks.

"New York leads the way. Adoption of this humane measure shows the nation that Firemen can and should have an eight-hour day.

"We hope soon to be aiding our brother fire fighters in other cities towards the same goal."

Operation of Three-Platoon

The three platoon is a ten-squad system. A fireman will work six days from 8 a. m. to 4 p. m., then swing off for thirty-two hours. Then six days work from 12 p. m. to 8 a. m. and swing off for thirty-two hours. Then six days from 4 p. m. to midnight and swing off again for thirty-two hours. This completes a cycle of twenty days. On the twenty-first day he starts the cycle all over again.

Regardless of the inevitably slow progress of three-platoon installation which should start on January 1st next, the program for the elimination of the twenty-four hour working day will go forward in the New York Fire Department, the Fire Commissioner has publicly stated. The City Budget has made provision for $417,000 for additional personnel effective March 1, 1937. This arrangement will have the effect of placating the fire fighters while the department is struggling with the problem of preparing and training an adequate number of new men for three-platoon duty. The Fire Commissioner has asked the City for the use of a large armory in which the training and instruction can be carried on this winter.

The School of Instruction in East 68th Street cannot physically accommodate more than 150 men in one group. Commissioner McElligott is anxious to enlarge on that feature of the Fire Department. It may be that the ninety-day course of training will be reduced to sixty days.

There are about 1,700 men on the existing eligible civil service list for firemen. Suggestion has been made that the city certify the existing list for City Policemen, as appropriate for the position of Fireman. The police list has about 4,000 names on it. Most of them will never be reached. There is little doubt but that most of those on the police list would be willing to take the fire job in preference to "dying" on the list. It takes from six months to a year to hold an examination and establish a list for these positions.

By William Paul Babcock

The first straight salvage truck installed in a volunteer department made its appearance at Nyack, N. Y. As a matter of fact, this salvage company was probably the first organized in any volunteer Fire Department. The man responsible for this development in the volunteer service was Captain Wm. Paul Babcock, who took command of this company upon its formation.

Because salvage work is increasing in importance in volunteer departments, it is appropriate that the man responsible for its start should be selected to conduct this column on salvage work in fire departments.—Editor.

IN initiating this column for readers of FIRE ENGINEERING there is just one stipulation, and that is that the readers will understand that it is not a "one man show" and that for a column to be really good must count on suggestions from the field.

The heading of this column is easily explained. In salvage work the cover is an all important tool. An ordinary so-called waterproof paulin is not very suitable for fire salvage work. To be really effective and efficient, a salvage cover must be something more than waterproof. Especially if it is to be handled by volunteer firemen, it should of all things else be light of weight, as in some such outfits there may be only two or three men who can be spared for this work. And because many small town fire companies have little or no heat in their quarters, or have to travel long distances to fires, their salvage covers should not stiffen in the cold air, neither should they get "tacky" and stick in hot weather, as either condition will delay their opening and spreading.

Ordinary paulins usually leak at the seams, a feature which should be eliminated from fire salvage covers. The "treatment" of a salvage cover should be such that it will not be affected by hot water, of which we get plenty in fires, and it should resist chemicals which may be floating around in fires. All in all, I should say, a real, honest-to-goodness salvage cover should be a very specially designed and carefully made piece of equipment, calculated to meet and withstand all conditions likely to be met in fire practice.

If *You* have had any particular experiences with good or bad salvage covers, I should like to learn of them and pass them on to others.

I'll be seein' you next month!

PROMOTIONAL STUDY COURSE

Herein is presented a series of definitions, questions and answers designed to aid fire department officers in preparing themselves for promotional examinations. In this department, which appears monthly, will be included questions typical of examinations held throughout the country.

Definitions

Goose-neck Ladder: A goose-neck ladder of a fire escape is one so arranged that the upper end is curved to hook onto platform or railing of escape.

Rise of a Step: The rise is the vertical portion of the step (of a stairs).

Tread: A "tread" in a stairway is the upper flat portion of the step on which the foot rests.

Factory Building: The term "factory building" means any building, shed or structure which, or any part of which, is occupied by or used for a factory.

Questions

(To be answered in next issue)

1. What general care would you give to motor pumping unit after returning from fire?
2. (a) Explain in full the steps you would take to draft water with a positive displacement pump.
   (b) How does a pump draft water?
3. What is the function of a relief valve on a fire pump? Explain its location and operation.

False and True Questions

4. T F—A proper mixture of dust and air will ignite spontaneously.
5. T F—The force of dust explosion is exerted in all directions.
6. T F—Heat from fires never travels through and radiates from good shutters.
7. T F—It is unnecessary to inspect each floor of a building separately when it is known that their usage is similar.
8. T F—Constant pressure at the source of supply limits the amount of water which can be taken from a main.
9. T F—Salvage work can be made more effective where the merchandise is raised above the floor on racks or tables.
10. T F—Ventilating of an entire floor is usually done differently than is the ventilating of a single room.
11. T F—One of the biggest hazards to consider in fire fighting is that of the inside exposure.
12. T F—Firetrap buildings are sometimes flanked by modern fire-resistant buildings.
13. T F—It seldom becomes necessary to provide for entrance of cold air at bottom of buildings being ventilated to any large extent.
14. T F—Fires are never kept from extending to buildings by reason of their being equipped with interior standpipes and good hose.
15. T F—A vacuum in the water main is never a source of trouble to the fire department pumper, but instead is an imaginary trouble.
16. T F—Fire screens are installed underneath vents in oil tanks so that flame on the outside will not come in contact with vapors inside the tank.
17. T F—Gasoline is non-injurious to rubber lined hose.
18. T F—In a gas explosion, the greatest damage is usually done in the vicinity of its origin.
19. T F—The only duties of the fire department at a fire are the saving of life and the extinguishment of the blaze.
20. T F—Nitric acid when brought in contact with organic matter may cause fire.
21. T F—Men wearing breathing apparatus are not affected by excessive heat.

Completion Statements

22. Three fires where water would be of no value in extinguishing them are ..... and ..... and .....
23. Water pressure (where water is at rest) depends upon the .....
24. The chief advantage of the dry pipe sprinkler system over the wet pipe system is .....
25. The direction toward which the wind blows is called the .....
26. The direction from which the wind blows is called the .....

Answers to Questions in Previous Issue

1. (a) Thoroughly ventilate the plant at once, opening all windows and doors, and if a relief valve is provided on the ammonia system, to the atmosphere, this valve should be opened at once. If gas is dense in plant, and men must operate therein, they should be provided with proper gas protectors. Use water liberally, cooling off ammonia storage tanks, ammonia piping and other equipment containing ammonia gas under pressure. Water streams absorb a great deal of the gas in the atmosphere, and will ease the situation for the men.

If relief valve is not provided, any portion of the system leaking should be cut off by valves provided for that purpose. Balance of equipment should be thoroughly cooled with water streams, which reduce the pressure therein.

Precautions: Some of the dangers incidental to fires in ammonia plant include possible asphyxiation of men working therein; explosion of gas when mixed with air; bursting of tanks due to high pressure caused by a fire. Care must be taken to properly protect the men working in the plant against the ammonia gas. Thorough ventilation will reduce the possibility of explosion of the gas; cooling the equipment with water streams will reduce pressure and check possible bursting of ammonia containers.

(b) The exact method of handling this fire would depend upon the point at which the fire was burning, and its progress. As the occupancy of the top floor is known, it will be assumed that fire has already reached this part of the building.

General warehouses of this height are usually of old construction, brick with wood joist. Furthermore they are usually well filled with combustible materials such as old furniture, carpets, cloth, and as noted, baled rags on the top floor. It is probable that an open hoistway is employed for raising the baled rags to the top floor, and this in itself represents a serious fire hazard.

If fire is burning on the fourth floor, and has been burning for some time, it is likely the floor supports will have been weakened. In this case it will be advisable to operate from ladders or from window sills only. It would be highly dangerous for men to operate from the floor below, for just as soon as streams are put in operation the weight on the top floor will increase due to absorption of water by the baled rags and collapse of floor is likely. If fire is in an advanced stage on the fourth floor, large streams will be absolutely essential, although not always considered the best practice when floor is insecure. Ventilation should be provided, due to the fact that burning rags throw off a heavy smoke which will make it very hard for the department to operate from front and rear windows unless ventilation is accomplished in an effective manner. Hence first truck company would be employed for this purpose, going to roof by way of ladder. First engine company would be sent to fourth floor by way of ladder and second engine company to rear to operate by way of fire escape or ladder into fourth floor. Additional lines would be put in operation front and rear as facilities provide.

No mention is made of the assignment covering this fire, but if first alarm only has been transmitted, and building is of fairly large area, a second alarm would be sent in immediately upon arrival.

After fire has been brought under control and extinguished, time would be allowed for water to drain off floor before men were sent in to overhaul.

(c) In a paint and varnish store highly combustible stock is maintained. Many paints are made with volatile inflammable thinners, while lacquers and varnishes are in themselves inflammable to a high degree. In most paint and varnish stores thinners are kept in tanks or large cans, which constitute a serious problem once fire starts.

In fighting a fire in a paint and varnish store water streams are commonly used, but care must be maintained in directing these streams so as not to upset open containers having inflammable liquids therein. Care must also be taken to keep streams out of inflammable liquids kept in open containers.

Thorough ventilation is necessary for the protection of the men. Use of foam apparatus is desirable for handling fires in containers filled or partly filled with inflammable liquids, and which are open. On the other hand water streams are absolutely necessary to keep the stock which has not been ignited cooled. For instance, the great array of paint cans which are closed, should be kept chilled so as to prevent their bursting or open-

ing up due to gas pressure within caused by the heat from the fire.

Carbon dioxide gas is highly effective in this type of fire if available in sufficient quantity.

Precautions necessary would include thorough ventilation to draw the inflammable fumes out of the building; keeping men out of range of possible explosion; summoning of sufficient apparatus in the event that the alarm does not bring out enough equipment and personnel. Every container of paint, varnish, shellac, and similar materials is subject to bursting upon heating. Not only will they burst, but the contents will add to the intensity of the fire as well as contribute their share to dense smoke and fumes encountered in this type of blaze. If fire is burning on ground floor, proper precautions must be observed to prevent it reaching the basement where inflammables may be stored in quantities. Floors above fire floor should be protected with streams for the inflammable vapors rising may ignite at any moment, spreading fire to all floors above in communication with stairwells, elevator shafts, and other passageways.

2. True; 3. True; 4. True; 5. False; 6. False; 7. False; 8. True; 9. False; 10. True; 11. False; 12. True; 13. True; 14. True; 15. True; 16. True; 17. True; 18. False; 19. False; 20. True.

21. . . . refrigerating apparatus.
22. . . . running over hose.
23. . . . low. . . .
24. . . . latter. . . .

School Held for Watchmen

A watchmen's training school, under auspices of the division of vocational training of the Massachusetts Department of Education and the Boston Chamber of Commerce, is being held at the state house in Boston, Mass. There are to be four sessions of two hours each.

Harry J. Carlson, Chairman, Fire Prevention Committee of the Boston Chamber of Commerce, presided at the opening of the school and Deputy Chief Samuel J. Pope, Boston Fire Department, was in charge of the second meeting.

Robert O. Small, Director of Vocational Training, and Stephen C. Garrity, State Fire Marshal, will conduct the two November meetings.

The speakers and their subjects are as follows:

"The Importance of the Watchman in Fire Prevention and Control," by Percy Bugbee, Assistant Managing Director, National Fire Protection Association; "A Visual Demonstration of Fire Hazards," by Theodore Gunn, New Hampshire Board of Underwriters; "What A Watchman Should Know About Fire Extinguishers," by P. C. Charnock, New England Insurance Exchange; "Co-Operation of Watchmen with the Fire Department," by Chief Selden R. Allen, Brookline, Mass.; "Some Thoughts About Watchmen and Watchmen's Service," by Alfred N. Miner, Vice-President, Massachusetts Safety Council; "Principles of First Aid," by George P. Johnson, American Red Cross; "Accident Prevention," by Ralph Pendleton, of the Safety Council; "What A Watchman Should Know About Automatic Sprinklers," by R. E. Magnuson, Associated Factory Mutual Fire Insurance Companies; "What A Watchman Should Know About Signalling Systems," by Superintendent of Fire Alarms George L. Fickett, Boston; and "The Importance of Salvage," by Deputy Chief John J. Kenney, Boston Fire Department.

HARRY BELKNAP.

Fire Departments and Police Regulations in Connecticut

The relations between the State Police Department and the Fire Departments of Connecticut was the subject of an address by Captain Walter Stiles, of the Connecticut State police at the first meeting of the season of the Fairfield County Fire Chiefs' Emergency Plan, held in the School Auditorium, Nichols, Conn., on the evening of Wednesday, October 28. The President, Chief Sydney Stapely, Chief of Nichols, presided. Other guests of the Plan present were Lieutenant Frank Virella and Inspectors Earl R. Morin and Frank Starkel, all of the Connecticut State Police.

Captain Stiles in his address touched on many important matters dealing with the relations of the Police with fire prevention and arson. He referred to the inadequacy of the laws regulating the storage of oil and gasoline in the state. A law with teeth had been introduced, but before the legislators were through with it, five important sections had been blue penciled, and only the beginning and the end of the bill was left. As passed, it was not very serviceable in enforcing safety regulations. In formulating regulations for explosives, the department had consulted with the Institute of Explosive Manufacturers; with dealers and had visited many local fire marshals.

Captain Stiles referred to the confusion existing as regards the duties of fire marshals. In some cases these conflicted with those of the building inspectors. He said there should be a community of interest between these two officials. On the subject of the regulation of fireworks, a bill had been prepared for submission to the legislature looking to the control of their sale and use. The whole interest ot the department is to obtain a fair administration of the law. In the matter of the inspection and removal of fire hazards, the department has assisted the local fire marshals where bad conditions remain. It is the desire of the department to cooperate as fully as possible with the local fire marshal. The investigation of suspicious fires is the principal function of the fire marshal's office and in this matter the full cooperation of the department is at his service.

Several questions were asked Captain Stiles by the members. Some of these he referred to his assistants present, who answered them. At the conclusion of the address, Captain Stiles was elected an Honorary Member of the Plan.

President Stapely called upon Secretary Moehring to read three letters that had been received, each referring to the account of the last meeting in FIRE ENGINEERING, and inquiring as to the status of the matter of pensions and compensation for volunteer firemen in Connecticut. These were from Chief Milton F. Brown, Fire Headquarters, Pawtucket, R. I.; Ralph D. Hess, Secretary, Board of Trustees, Firemen's Pension and Relief Fund, Fairmount, W. Va., and R. T. Boone, Second Assistant Chief, Berea, Ohio.

Two new members were elected. It was decided to hold the November and December meetings on the third instead of the fourth Wednesdays, as Thanksgiving and Christmas eve falls on the regular meeting night. The next meeting is to be held at New Canaan, Conn., on the evening of Wednesday, November 18. Refreshments were served by the local department after the meeting.

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Funeral for Three Firemen Who Lost Their Lives in Dublin Fire

Three members of the Dublin, Ireland, Fire Department lost their lives in a fire at Pearse Street, Dublin. Many notables were present at the funeral including Mr. De Valera, President of the Irish Free State, the Lord Mayor of Dublin, members of the Dail, and detachments from the English Fire Brigade. The cortege is shown passing the Central Fire Station.

THE ROUND TABLE

For Practical Discussion of Current Fire Department and Fire Management Problems

COMPETITIVE DRILLS IN FIRE DEPARTMENTS

WHEN the bewhiskered, red-shirted, and gayly attired volunteers of a county or state met during the so-called "romantic days" of fire fighting, the result was a muster.

Picked companies of men met in competition with one another to see which would come out the victor in some chosen water battle or department evolution. In fact the spirit of competition was so keen in that period that even at fires during the back-breaking and laborious era of the hand-pumper it was a common stunt to see if one company should draw water away from another group. And when such a deed was accomplished, a mighty shout would arise from the interested spectators.

This spirit of competition has lived on through the various stages of Fire Department development. It has survived the hand-pumper, the introduction of the steamer, the passing on of the horse-drawn apparatus, and remains in some departments even today.

At present it exists in the form of competitive drills within the company or department. Men are drilled and trained to perform certain tasks in the least possible time. At drill towers, the official time is taken of each company going through some regular form of evolutions.

However, there are a number of Chiefs today who question the value of these competitive drills. They believe that they result in more harm than good, that they lead to discouragement among the losers, and that they bewilder the men when they are called on to face actual fire conditions. Others are still confident that the competitive drills result in greater efficiency.

Opinions of the members of both schools are contained in this discussion. The problem in full is printed in the box on this page. In the box on the following page is the question that will be considered next month. Should you have some comments that you would like to add to the next discussion, you are invited to write to the "Round Table Editor," FIRE ENGINEERING, 24 West 40th Street, New York, N. Y.

Discussion of the Question

Harry Baker, Chief, Lewiston, Idaho.: Personally I disapprove of competitive drills, because competition breaks down the morale of the firemen. There are also too many accidents caused by such drills, equipment is broken, etc.

Evolutions that are put on during a competitive drill are done too fast. When a mistake is made, it is too late to stop the evolution. Firemen should at all times during drill work, work slow, be sure and accurate. Then if a mistake is made, stop the drill then and there, and correct it. Each time the drill is repeated keep speeding it up—"practice makes perfect."

Competition has a place in district meets, conventions, etc., where cups and awards are at stake, and where men are picked just for that type of work.

The work that competing teams do should be that which they use in real fire fighting, not trick or fancy maneuvers.

R. G. Stowell, Chief, Chanute, Kan.: I approve highly of competitive drills in a Fire Department. I think they are the only drills to have. Each man tries his utmost to outdo the other through friendly competition. They pay close attention and they know how to work together. Each knows his duty and tries to perform it to the best of his ability, each time trying to be more successful, more accurate and more timely. Each knows how to take the other man's place if necessary. Each knows different methods of performing certain duties and when the information is put together it makes a more efficient department.

J. J. Cuddihy, Chief, Hopewell, Va.: I am of the opinion that competitive drills should not be held in connection with Fire Departments. I disapprove of them. I believe that a spirit of cooperation should be built up, each man working with his fellow fireman, rather than having competitive drills in which each man attempts to outdo the other. I am sure that better results are obtained by preparation, study of equipment, methods of fire fighting and regular drills.

This method avoids any chance of creating friction or hard feeling. In order for a man to obtain a post in the department he must be mentally and physically sound and to hold the job he must show himself to be capable. Fire fighting is a task that requires the best from each and every man, and drills will prepare them to do their best in a spirit of "all together, boys," which, in my mind, is a spirit of cooperation.

J. W. Miles, Chief, Crowley, La.: I do not approve of competitive fire drills in the department. The competition tends to make them perform too quickly in order to "beat" the other fellow. In Fire Department work the training should be given by a trained man and done in a systematic manner, not thinking of speed alone. The best man in any position is the well trained man and I believe in trained firemen, and in having a system and plenty of time to train him. The instructor in each Fire Department should take a short course in firemen training each year either in his state, if he has such a course, or if not he should be sent to some other school, in order to keep in training. This enables him to keep abreast of the times.

The competitive drill work creates hard feeling among the men and is of no value in the long run. A well trained man is a lasting value to his city and a worth while fireman to his department.

E. I. Kingsley, Chief, Aberdeen, S. D.: A desire to excell calls for more practice, which is prompted by competitive drills in Fire Departments and consequently adds to the efficiency of the work. We have these contests in our department and we highly approve of them.

D. W. Brosnan, Chief, Albany, Ga.: We have the two platoons of each company drill. We make a record of time consumed in the evolutions and we think we speed up the work. Of course we urge taking sufficient time to do the job right. We think the practice good, and that it makes for efficiency.

D. J. Rayburn, Chief, Eldorado, Kan.:

HERE IS THE PROBLEM

What is your opinion about competitive drills in Fire Departments?

Do you approve or disapprove of them? Why?

What advantages or disadvantages do they present over ordinary drills?

I think competitive drills are a good builder of cooperation and will do the job right with the least amount of effort and time.

I heartily approve of them. They create a friendly rivalry among the members of the department to be just a little better thinker, a little quicker and a better fireman than the other fellow at the game.

Frank Charlesworth, Chief, Providence, R. I.: It has been the practice of this department to have companies report at the drill tower three times a year with their apparatus at which time they go through various evolutions. Each company is timed in its work and reports are prepared and submitted to the Chief of the Department. These reports are followed by a discussion. Companies lagging in their work are given a "pep talk," care being taken to avoid anything which might tend to discourage companies showing slowness. A friendly rivalry is created, the results of which are manifested in active service.

Wm. J. Lutz, Chief, Wilmington, Dela.: The rivalry created by competitive drills at the training schools tends to increase the efficiency of the individual companies. With a set of practice evolutions to perform against time, with results published, it has been the writer's experience that the various companies desire to make the best showing possible.

I approve of this method in training schools.

These drills create more interest in the company school and with the approach of competitive tests practice of these evolutions in the company quarters are increased to the extent that each evolution is performed to near perfection. The handling of tools and appliances, tying of knots and hose connections, putting pumper in service, all very practical work, are practiced for speed and accuracy. We all know that "practice makes perfect" and the same is true in Fire Department work.

Up until a few years ago competitive drills were held each year in this city, with a solid silver cup as prize. The winner would retain the cup for the year it was won. Three consecutive years would be required to retain the cup permanently. An award of gold badges was made the company winning three years running.

Disadvantages of competitive drills are few. The older men in the department trying to match the speed of younger men open themselves to physical strain which is not good. Minor injuries happen where the men are on their toes and making all efforts to establish records.

I believe competitive drills will again be established in this department in the next year.

Only one fireman has met with serious accident in this city at the training school in the past fifteen years.

E. P. Welch, Chief, Columbus, Ohio: We do not have competitive drills in our department. The reason for this is that I do not think it fair to require companies to compete, as our department has members ranging from the ages of 22 to 70 years. This is hard to control from the standpoint of assignment and some companies are somewhat off balance. They could not make as good a showing as a company of younger men and this leads to discouraging members of companies that could come up to the standard of other companies. Our training for men is such that a rating is given each man as to his individual efficiency.

Ben B. White, Chief, Pampa, Fla.: I believe that competitive drills are very good in any department that consists of more than one company of men, inasmuch as it trains the men to work in harmony with each other. It also brings to the minds of the different companies that their efforts are being watched.

It is also very good from the standpoint that each man has the chance to check the ability of the other fellow. Also to take note of the other men's mistakes and also to correct his own.

It also gives each man something to gain by sincere efforts. At the same time it gives the officer of the department the opportunity of knowing the ability of his men. I am also of the opinion that it causes the men to take the work more seriously.

* * *

HERE IS THE PROBLEM FOR THE NEXT ISSUE

What has been your experience with fire originating from oil burners such as used in dwellings for heating purposes?

Have you found them to be a serious fire hazard?

If fires have been caused by oil burners, where did they start and from what immediate cause?

Do your inspectors check up on oil burning installations when making building inspections?

ANSWERS TO PREVIOUS QUESTIONS

The following replies were received in answer to a previous question on the prevention of excessive water damage made by sprinklers:

Howard Travers, Chief, Baltimore, Md.: Companies in the neighborhood of the fire respond to sprinkler alarms and thereby prevent excessive water damage. Salvage corps carry extra sprinkler heads. Extra heads are also kept in the engine rooms of all sprinklered buildings.

Sprinkler systems are always put back into service before leaving the scene of the fire.

Department men are trained to reset dry valves and other accessories and to fill tanks.

Wm. Burnett, Chief, Des Moines, Iowa: Extra heads are carried on fire trucks. We always put the sprinkler system back into service before leaving. Our men are trained to reset dry valves and other accessories and fill tanks.

The following replies were received in answer to a previous question on fighting fires in flooded areas:

Earl Swartz, Chief, Harrisburg, Pa.: Fire fighting facilities were curtailed during the flood, due to the fact that approximately 33 1/3 per cent of the city was under water and this section was such that fire apparatus could not operate in that district. We suffered one fire and one explosion during the flood and in both cases it was necessary for the firemen to use boats.

The entire Fire Department was on continuous duty from March 18 to March 28, 1936. During this period the firemen operated boats in rescue work. The fire trucks were used to haul boats, supplies and refugees. Fire houses were used for the housing of refugees and hundreds were fed and clothed at these houses.

The only suggestion we have to make is that the department of the city should purchase several high powered motor boats, so that they could be used in an emergency.

John L. Lucier, Chief, Northampton, Mass.: About 600 homes and places of business were affected by flood; the water was from five to eighteen feet deep. Ward Three, in the eastern part of the town, could be reached only by going around about 6 miles, so we stationed a combination chemical and men in that district. Men slept in a school house, and had telephone connections to the central station. We had two fires in the flooded area during the flood and reached them by motor and row boats. We used the hand chemical extinguishers and pails to extinguish the fires. There was plenty of water.

The Fire Department aided by doing rescue work. People, animals, clothes and furniture were saved by carrying every thing possible up to the second floors and attic of buildings. Pumped out gas and electric plants, so that the city could get electricity and gas. We also pumped out about 200 business places, and 350 homes, which had from six to ten feet of water in the cellar and basements. Floodlights, hose of all sizes, ropes, pulley blocks, nozzles, hydrant wrenches, spanners, adapters, rubber boots, coats and many other things too numerous to mention were used during the flood for work other than fire fighting. I believe that portable pumps would be useful in case of fire in a flooded area.

Meeting Held at Sprinkler Factory

William J. Carroll, of the Rockwood Sprinkler Company, Worcester, Mass., was host to the members of the Massachusetts Fire Prevention Association at a well attended meeting held on October 26 in the Rockwood factory, Worcester.

Emil Benson, of the company, conducted an interesting series of demonstrations of automatic sprinkler systems and thermostatic devices including the new Rockwood Dualguard. Captain C. F. Bell, Brockton, presided at the meeting. Luncheon was served by the Rockwood Company after which there was a round table discussion.

Chief Charles L. McCarthy, of the Worcester Fire Department, and Supt. Lorton C. Walden, of the Worcester Protective Department, were among the speakers.

Mr. Carroll termed the automatic

sprinkler the firemen's greatest friend. Tests were made of automatic closing shutters and fire doors, and the new rate-of-rise-in-temperataure system for giving alarms was described.

At the close of the meeting H. C. Kendall and W. J. Carroll, of the Rockwood Sprinkler Company, were elected honorary members of the association. The November meeting will be held in Malden.

HARRY BELKNAP.

Fire Wardens Meet at Andover, Mass.

Chief Charles F. Emerson, Andover, Mass., presided at the meeting of the Middlesex County Forest Fire Wardens' Association held in the Andover Town Hall on the evening of October 29.

Motion pictures were shown of various activities of the men of the Civilian Conservation Corps. These were shown through the courtesy of Charles Hayes, National Park Service, and Maxwell C. Hutchins, State Fire Warden.

A committee was appointed to arrange for a joint meeting with the Essex County Forest Fire Wardens' Association.

HARRY BELKNAP.

Des Moines Ends Fireworks

More children have been assured the use of all limbs and organs as the result of action taken by the City Council of Des Moines, Ia., to prohibit the retail sale of fireworks in the city. The only exception to the rule is that the Council can grant permission for supervised fireworks exhibitions that are approved by the Fire Marshal.

When State Fire Marshal Pyle heard of the action of the Council, he said:

"That's fine. I'm mighty glad to hear that. I think about seventy Iowa cities have passed ordinances regulating fireworks since the disastrous fire at Spencer, Ia., several years ago.

"Of course all of them don't prohibit sale and shooting of fireworks entirely. Some of them only specify days on which fireworks can be sold and exploded. This office is going to get behind a bill to present at the next session of the Iowa legislature. Fireworks are a great fire hazard and it is our job to try to cut down the fire loss."

N. E. Signal Men Meet

At a meeting of the New England Municipal Signal Association held in New Bedford, Mass., September 16 and 17, the following talks were given:

"Development and Extension of the Use of Buried Cables," by L. W. Allen, Hazard Insulated Wire Works.

"Meeting Flood Emergency Conditions," by Supt. E. A. Sullivan and Fire Commissioner Horace Clark, Hartford, Conn.

"Maintaining and Drying Municipal Cables During the Flood," by P. F. Goss, Air Reduction Sales Company.

"The Position of Municipal Fire Alarm Organizations in the Scheme of Fire Prevention," by A. C. Hutson, Assistant Chief Engineer, National Board of Fire Underwriters.

"Vitaguard—the Recent Development of Central Office and Street Box Equipment for Small Towns," by Frank Bridges, Gamewell Company.

"The Talkalarm System," Alfred A. Robinson, Bridgeport, Conn.

"Some Phases of Grounded Municipal Fire Alarm Systems," by Joseph Siddall, Newark, N. J.

"Other Angles on Municipal and Private Fire Alarm Systems," by William F. Franklin, New York City.

"N.M.S.A. Convention Attitude on the Subject of Consolidation," by Supt. Alfred C. Ames.

HARRY BELKNAP.

FIRE PREVENTION MEN WITNESS TESTS ON MANY TYPES OF FIRES

Typical Fire Conditions Created on Proving Grounds at Bloomfield, N. J., and Extinguishers Demonstrated

FIFTEEN tests were conducted by Walter Kidde & Co., at their Bloomfield, N. J., plant on October 8, to show the many visitors the extinguishing effects of the various type fire extinguishers on a number of different fires.

A small pan of gasoline was ignited and after burning for 10 seconds was put out with a Lux extinguisher in 2 seconds.

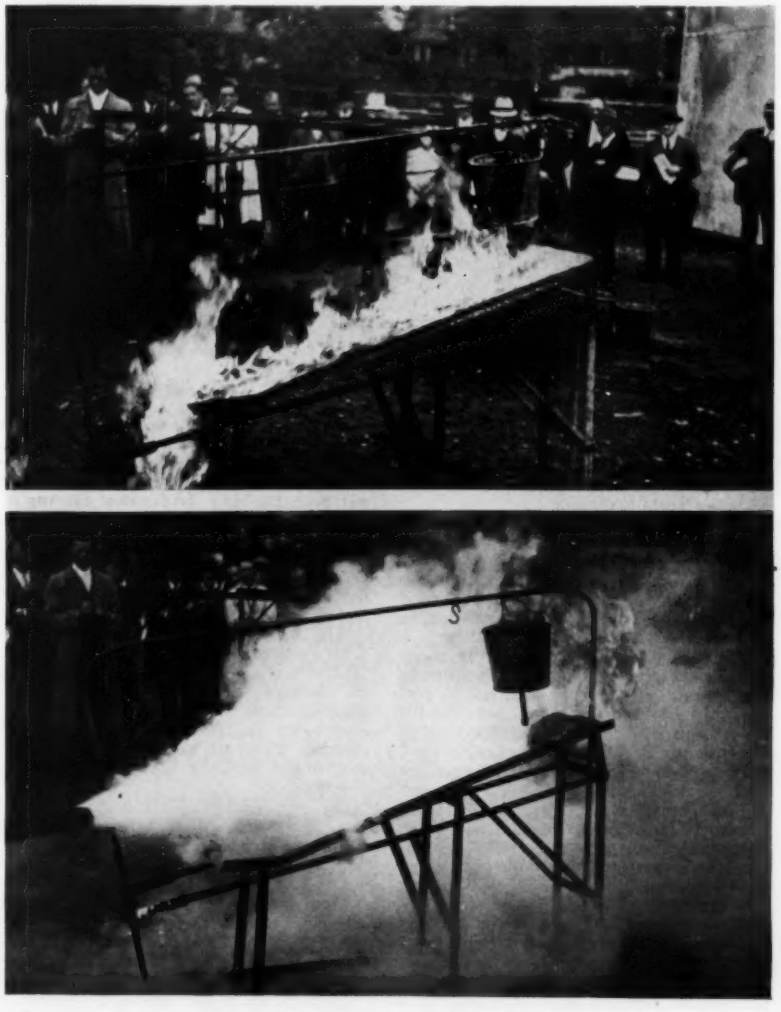
The third test involved tub fires. Six metal tubs were lined up, filled with various flammable mixtures. All were ignited and attacked with a Lux extinguisher. The fires were out in 17 seconds.

A wood framework was built to simulate the bilge of a ship. A pan with gasoline and oil was placed within the framework. After the fire had burned for 2¼ minutes and was deeply seated in the frame work, it was extinguished in 7 seconds with the carbon dioxide extinguisher.

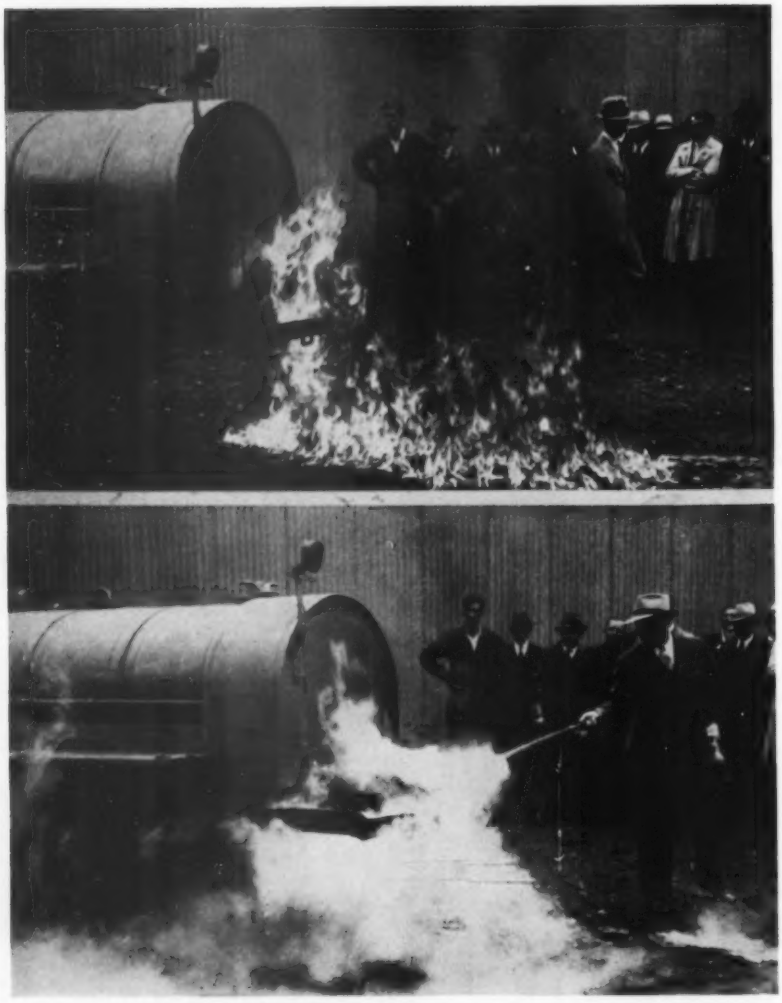
In a paint cabinet were placed twenty open cans of various paints. The four shelves in the cabinet were doused with gasoline. After the fire had burned for 23 seconds, it was extinguished within 10 seconds by the extinguisher.

A perforated 10-qt. pail was suspended at the top of a drainboard, and a quantity of gasoline was poured on the ground. Gasoline flowed down the drainboard on to the ground. The gasoline was ignited and after burning for 20 seconds it was put out in 8 seconds.

Fifteen gallons of gasoline and oil were poured over the two rear tanks of a 400-gallon tank truck and gasoline was



Before and After of the Drainboard Fire Test



The Start and Fnish of the Gasoline Tank Truck Fire

also poured on the catwalks of the truck and the ground underneath the truck. A fire was started and after burning for 23 seconds, was extinguished in 31 seconds by carbon dioxide.

Gasoline was sprayed through a perforated pipe onto a vertical panel and the surface thus covered with the fluid. Gasoline and oil were also poured on the ground. After the fire had burned for 20 seconds, it was extinguished in 11 seconds with a Lux extinguisher.

A liquid spill fire was made by pouring 30 gallons of oil and gasoline on the ground. It covered an area 24 feet long by 5 feet wide. After burning for 27 seconds, the fire was extinguished in 9 seconds. The fire was re-ignited and extinguished with the same extinguisher in 13 seconds.

The Lux-O-Matic system for automatically protecting motorboats and yachts was next demonstrated. The automatic system on a dummy boat operated 3 seconds after the fire was started, and the fire was out in 5 seconds.

A demonstration was given of the water type extinguisher which discharges water by means of carbon dioxide pressure. A test was shown of this propulsion equipment as applied to a 40-gallon soda and acid type tank.

A 5-cylinder radial airplane engine was equipped with cowling to represent the engine compartment of an airplane. Gasoline from a 10-gallon tank was discharged over the engine block through perforated tubing. In front of the engine was a high velocity blower to create wind condition simulating an airplane in flight. After the fire had burned for 11 seconds, it was extinguished in 2 seconds by a Lux built-in extinguishing system for airplanes.

The final test was that of a built-in Lux system in a building 27 feet long, 18 feet wide by 15 feet high at the peak of the roof. About 120 square feet of gasoline pans were placed on the floor and after the fire had burned for 25 seconds, the Lux system was manually discharged and the fire extinguished in 6 seconds.

Sydney, Australia, Firemen Trapped

One fireman was burned to death when six firemen were trapped on the top floor of a three-story factory building at Sydney, Australia. The factory was mainly used for knitting hosiery.

Shortly after the fire had started, it reached drums of oil used for lubrication. The blazing oil trapped the firemen. Three firemen were staggering blindly on the stairs, suffering intensely from burns, when rescued.

A portion of the building was used for the storage of drugs and chemicals, and had the fire reached there, new hazards would have developed. The cause of the fire is not known.

JOSEPH GUNNER, JR.

Suit Filed For Death Damages

Heirs of the late Chief Mellen R. Joy, Saugus, Mass., Fire Department, who died from burns received in an explosion in the town garage a year ago last July, have filed suits for damages totaling $50,000 against the Air Reduction Company, Boston, makers of the acetylene tank which is alleged to have exploded.

HARRY BELKNAP.

N. Y. Repairs Apparatus

Fire apparatus repair units have been assigned for checking and repairing the apparatus in service at company quarters of the New York Fire Department.

According to an order issued by Commissioner John J. McElligott, each unit will consist of two automobile mechanics with either a pumping engine or a ladder truck. The Foreman Automobile Machinist will make an advanced inspection of the apparatus needing repairs, will assign the repair units, and will supervise the work. He will make requisitions for repair parts and keep reports of the work.

Arkansas Firemen Meet

The fifteenth annual convention of the Arkansas State Firemen's Association was held at Little Rock.

A joint luncheon was held with the Arkansas Municipal League which was in convention at the same time.

Included in the talks was one by Mayor R. E. Overman, Little Rock, who told of the merits of the civil service system. There were a number of interesting speakers on the program.

The visitors were treated to a "midnight party" at which there were boxing and wrestling matches.

A committee was appointed for establishing a part-time training school for firemen, and to standardize work under civil service regulations now in force.

First U. S. Firehouse

The original home of what is believed to be the oldest fire company in the United States is located at Mount Holly, N. J.

It is a small building, for when the company was organized in 1752 fire equipment consisted of leather buckets, axes and small ladders.

It is claimed that this company is the oldest one in America to possess in complete form the minutes of its meetings from the time of its organization.

When first formed, the company was known as the Britannia Fire Company of Bridgetown. It changed its name in 1787 to the Mount Holly Fire Company, and in 1805 it again changed its name. This time it was the Relief Fire Company, and it is the name that is used today.

Questions and Answers

NOTE—Readers are invited to send in questions, which will be answered in the order received. Names are omitted from questions unless otherwise specified

Time Needed to Empty Tank

To the Editor:

How long will it take to empty a 110 gallon booster tank equipped with 200 feet of 1-inch rubber lined chemical hose and 5/16-inch tip, with a pump operating at 150 pounds pressure? Pump is situated on fire engine truck.

My solution is as follows:

Tank capacity 110 gallons. 200 feet 1-inch chemical.
100 pounds engine pressure. 5/16-inch diameter tip.

N.P. = E. P. ÷ (1.1 + K x L). K = .0095; L = 360.36.

Note: Have changed 1-inch hose to 2½-inch hose.

N.P. = 150 ÷ 1.1 + (.0095 x 360.36).

N.P. = 150 ÷ 1.52.

N.P. = 33.2 pounds per square inch.

Discharge = 29.73 x .0976 x $\sqrt{33.2}$ = 16.675 g.p.m.

Time to empty tank = 110 — 16.675 = 6.5 minutes. W. L. R.

Answer: Your solution has been checked quite carefully and one or two errors appear to have crept into it.

In the first place, when solving for the value of K, you secure 0.0095 for 5/16-inch diameter tip on 2½-inch hose. Did you divide by ten, after multiplying the 5/16 by itself three times. We get .00095 instead of .0095.

In the second place, for L, we get 363.6 instead of 360.36. This however is a minor difference.

To sum up our solution:

K = .00095.

The length of 2½-inch hose equalling the 200 feet of 1-inch hose is 18,181.

L = 18,181 ÷ 50 or 363.6.

N.P. = 150 ÷ (1.1 + 0.00095 x 363.6)
= 150 ÷ (1.1 + .345)
= 150 ÷ 1.445
= 105 pounds nozzle pressure approximately.

Discharge = 29.7 x .0976 x $\sqrt{104}$.
= 29 gallons per minute approximately.

The time required to discharge the 110 gallon booster tank would then be 110 ÷ 29, or 3.8 minutes.

Effects of Vacuum

To the Editor:

In the February, 1936, issue, page 61, the article answered for E. R. K. in reference to a pump drafting water at 10 feet. I notice that you added, after computing the gallons flow at 150 pounds, the weight of water for the ten foot draft, by multiplying .434 by 10 feet = 4.34 pounds, to be added to the pressure on the discharge side, totaling 154.34 pounds that is the actual pressure against the pump.

After reading from one of your books on practical hydraulics, I found where the weight of the water being drafted is sustained by the atmospheric pressure of 14.7 pounds per square inch. Therefore I take it that the water will be lifted to the pump level without any energy from the pump, other than removing the air from the hose or suction, since the pump is only 10 feet from the water. I should think that the pump would be working at a pressure of zero.

Will you kindly explain the relation of the mercury gauge to the ordinary compound gauge, used in drafting water. R. G. M.

Answer: Whether a pumping engine is forcing water against a pressure of 4.34 pounds or raising the same quantity of water to the same height, the work it does is precisely the same.

Whether a pumper is raising 33,000 pounds of water per minute 1 foot high by suction or whether it is forcing the same weight of water, the same height by pressure, it is doing exactly one horsepower of work.

With regard to mercury gauges, they are very sensitive and are used for such work as accurately recording negative heads, or partial vacuums. It would not be possible to use a mercury gauge on the pressure side of the pump, for the mercury column would have to be of a length far beyond practical limits, insofar as the apparatus is concerned.

Mercury is approximatey 13½ times the weight of water, and if the mercury in a mercury gauge can be raised by suction (or pressure for that matter), 1 foot, it is equivalent to a column of water 13½ feet. It is the great weight of the metal that makes it suitable for use in vacuum gauges.

Lifting Water

To the Editor:

We have had discussions from time to time on the capabilities of a rotary pump lifting water. Some contend that atmospheric pressure has everything to do with the engine lifting water, and the pump does nothing but suck the air out of suction sleeve thereby creating a vacuum.

My contention was that after the pump created a vacuum, and the water flowed to the pump, the pump was sucking water in addition to the atmospheric pressure. In other words after the pump created a vacuum and the water flowed to the pump, thereafter the engine was under just as much strain as it would take to pump water to the same height. H. S. H.

Answer: Whether during the period of starting up or fully operating, the rotary pump lifts water by suction—that is, tends to create a vacuum and thus enables the atmospheric pressure outside of the pump feed line to force the water up into the pump.

The only difference between starting up the suction and actually pumping water is that the water upon entering the pump acts as a seal between the pump gears and housing and makes it easier for the pump to maintain suction.

In other words, when first starting up, the pump must create a vacuum by taking the air from the suction line. Even very small openings permit quite a bit of air to get through, so that this part of the task of the pumper is sometimes quite difficult. But just as soon as the pump housing is filled with water, the water seals the spaces between the pump gears and housing and makes it easier for the pump to maintain a vacuum. The result is that there is a steady flow of water into the pump.

It all comes down to one point, namely, that it is easier for air to pass through an opening than water. Where the water may not pass through fine openings (such as the weave in a tightly woven cloth) air may do so. That's the way the water provides a seal in a rotary pump.

Naturally, just as much power is required to lift water by suction (once the flow starts) as to pump it to an equal height by pressure.

Finding Nozzle Size and Length of Line

To the Editor:

Is it possible, when the nozzle pressure is given and also the discharge, to find the size of tip being used. Also, is it possible to find the length of hose to be laid when the nozzle diameter is given, as well as the nozzle pressure. W. M. L.

Answer: Answering your first question, it is possible to find the nozzle diameter when the nozzle pressure and the discharge are given.

As a specific example, assume the noz-

zle pressure to be 50 pounds, and the discharge, 209 g.p.m.

Formula for discharge is as follows:

Discharge = $29.7 \times d^2 \times \sqrt{p}$, where d is the nozzle diameter in inches and p, the pressure at the nozzle in pounds per square inch.

If the discharge is 209 gallons per minute we get $209 = 29.7 \times d^2 \times \sqrt{p}$.

$209 = 29.7 \times d^2 \times \sqrt{50}$.

$209 = 29.7 \times d^2 \times 7.07$.

From which $d^2 = 209 \div (29.7 \times 7.07)$ or

$d^2 = 209 \div 209$ or 1 and $d = \sqrt{1}$, or 1.

Theerfore the nozzle diameter is one-inch.

Now with regard to your second question, assume the nozzle pressure is 64 pounds, the nozzle diameter is 1¼-inch.

Discharge is $29.7 \times 1\frac{1}{4} \times 1\frac{1}{4} \times \sqrt{64}$.

Discharge = 29.7 x 1.56 x 8.

= 370 gallons per minute.

The friction per 100 feet of 2½-inch hose = $2 \times Q \times Q + Q$.

Where Q is the flow measured in hundreds of gallons per minute.

Then friction = 2 x 3.7 x 3.7 + 3.7 = 31 pounds.

This is the friction loss per 100 feet.

If the line is laid horizontally, subtract the nozzle pressure from the engine pressure. Divide the remainder by 31, and you will have the length of line through which you can pump, measured in hundreds of feet.

For example, if engine pressure is 188 pounds, 168 — 64 = 124.

124 ÷ 31 = 4. The length of the line would therefore be 400 feet.

CORRESPONDENCE

Closed Body Fire Apparatus

To the Editor:

We made plans for the truck illustrated during the winter of 1933 but actual work on the apparatus did not start until July, 1934. It was completed during the winter of 1934.

The body is built on a Lincoln chassis and a centrifugal pump was mounted on the front. One of the unusual features is the 100-gallon booster tank which is built as an integral part of the driver's seat. The tank can be filled from the pump or by hand through a door on the right side of the truck.

The apparatus carries or has a capacity of 1,000 feet of 2½-inch hose, and 500 feet 1½-inch hose. However, we carry only 700 feet of 2½-inch and 450 feet 1½-inch hose. The rear of the truck is entirely open. There is an enclosed space under the main hose bed in which we carry 350 feet of 1-inch booster hose. There are small cabinets inside the body for small tools and first aid equipment. There is space for six salvage covers on the inside as well as on the top. Short ladders are carried on the top of the truck.

The roof is covered with waterproof ducking which has been set with marine glue.

The speed of the car has not been changed. It is still too fast for our roads. It is capable of 75 miles an hour, when fully loaded.

At the time we planned this truck we did not know of another one in this country. We rather expected that we would receive general criticism. Now that the truck is in service we are well pleased with it, and we are glad to note that other departments are coming to the closed type of apparatus. We know that once a department has a car of this type, it will not be satisfied with any other. Of course, we can see where we will make some changes in the next one we get or build.

As a department we are very young. We were organized less than five years ago. The per capita loss the first year was $13.44 and it has been cut down succeeding years to 40c, 16.5c and 3c. For 1936, with but two months remaining, we are able to report no loss. We are now building a 3-story drying and drill tower.

Yours truly,

J. A. LOCKARD,

Assistant Chief, Salem, W. Va.

Enclosed Type Apparatus of Salem, W. Va.

Church Razed by 4-Alarm Fire

Four alarms were sounded for a church fire which destroyed the Calvary M. E. Church at Minneapolis, Minn. Flames were discovered by the sexton in the rear of the church and shortly afterwards he had just time to leap to safety.

After the fourth-alarm, radio stations broadcast an appeal for all off-platoon firemen to report for duty. The fire fighting was in charge of Deputy Chief Ack Foster, aided by two Battalion Chiefs.

The fire broke out before a wedding that was to have been held. The nuptials were held at the specified hour but in the home of the bride's parents.

Chief Mahoney in Service 60 Years

Chief Thomas H. Mahoney, of the Westfield, Mass., Fire Department, on October 5 celebrated the completion of sixty years of active duty in the fire service. He is seventy-seven years of age and in good health. He is one of the oldest Fire Chiefs in New England. Chief Mahoney was born in Bath, Me., and first entered the Fire Department as a torch boy in the volunteer days. HARRY BELKNAP.

Iowa Firemen Meet at Eldora

The officers elected at the fifty-ninth annual convention of the Iowa Firemen's Association, an account of which appeared in the last issue, were as follows: J. Vincent Pyle, Chariton, President; Wright Hedges, Atlantic First Vice-President; E. V. Lindquist, Des Moines, Second Vice-President; F. A. McCarty, Emmetsburg, Third Vice-President; M. F. Gunderson, Oelwein, Fourth Vice-President; Earl Byers, Belle Plaine, Fifth Vice-President, and Paul A. Soener, Independence, Secretary-Treasurer.

It was decided to hold the next convention at Atlantic, Ia., on September 14 and 15, 1937.

Clark Heads Pennsylvania Firemen

Chief Michael E. Clark, Williamsport, Pa., was elected President of the Pennsylvania State Firemen's Association, at the annual convention held at Williamsport for which nearly 3,000 persons had registered.

The Vice-Presidents are George Lee, Royersford; Thomas Campbell, Newton Square; John Johnson, DuBois, and Thomas E. Evans, Scranton. James B. Aumen, Gettysburg, was re-elected Treasurer and Charles E. Clark, Wayne, re-elected Secretary.

The 1937 convention will be held in Philadelphia.

During the convention Dr. David J. Price, of the U. S. Department of Agriculture, gave a talk on "Explosions and Fires Caused by Water." It was followed by a recently completed sound motion picture on "Dangerous Dusts."

D. L. McElroy of West Virginia University spoke on "Fire Department Instruction Schools in West Virginia." J. O. Keller, Pennsylvania State College, gave a talk on a "Training Program for Pennsylvania Firemen." "Flood Conditions in Pittsburgh, 1936," were described by Ex-Chief Richard Lee Smith, Pittsburgh.

Here's Your Warmest Friend on a Cold, Wet, Run!

Fighting fires is a "he man's" job, especially so in winter. Long cold runs in wet clothing has put many a "he man" to bed with a severe cold or worse. The one best assurance you have of keeping warm and dry is to slip into a GLOBE SUIT.

These are without question the finest quick-hitch outfit you can buy. They have been worn by firemen in all parts of the country since we started making them back in 1905. Coats are light, easy to work in, yet warm as toast even when you've been drenched. Coats have wide chest protectors, pockets with patent stays that won't sag or tear out, warm wristers (optional). All our clothes are made of tough durable fabric with waterproof interlinings and warm wool linings. Choice of brown, black or white, any length. SEE ONE OF THESE SUITS — CONVINCE YOURSELF THAT IT'S THE FINEST SUIT YOU CAN BUY. **ORDER NOW**

COMPLETE OUTFIT Warm, lined and interlined, 35 inch coat and pants to match, only.. **$17.50**

This Coat alone, 35 in. length.. $10.00
This Pant alone.. $ 7.50

We Have Other Suits at Other Prices

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GLOBE MFG. CO.
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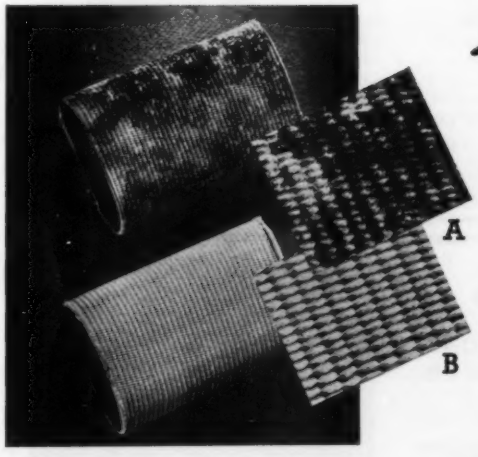
GLOBE SUITS

PROVAR PROCESSED HOSE

Fights Mildew Better
Fights Fire Better



★ Hose that fights mildew better is a better, more dependable fire fighter. When you use Republic Provar Processed Fire Hose you can be sure that the mildew problem is solved! Mildew can't live with Provar. This process is used exclusively on all Republic Fire Hose. It's permanent—will not wash out.

A six month's exposure in conditions favorable to mildew growth showed Provar Processed Hose still in perfect condition. This means a great reduction in hose costs, longer more dependable service, and—the price is the same as ordinary hose!

A Not processed for mildew protection.
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• • •

Unretouched photo showing results after samples were saturated with water and exposed to moist atmosphere for six months.

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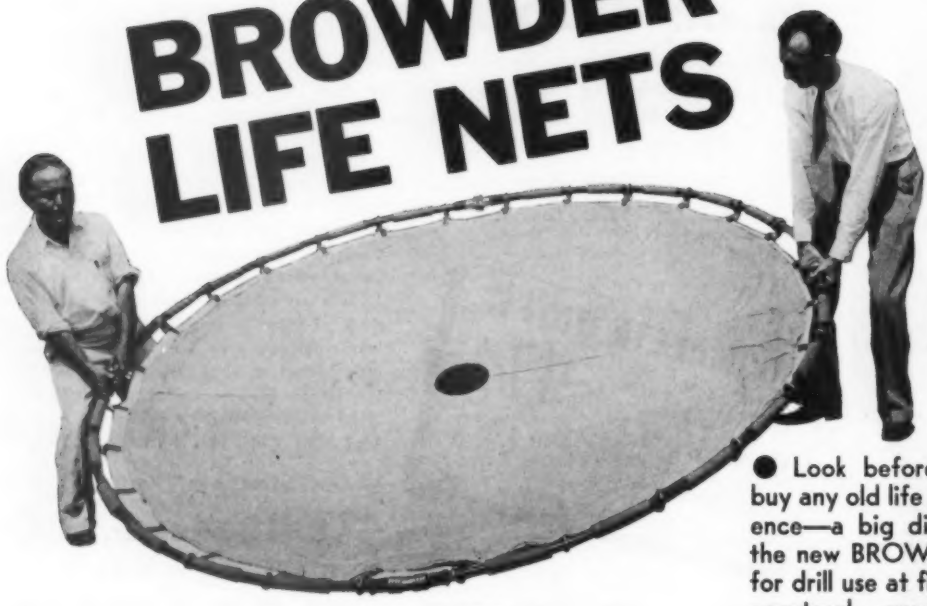

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New BROWDER Nets are the strongest and easiest handled life nets made.

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● Look before you jump! Don't buy any old life net. There's a difference—a big difference in favor of the new BROWDER NET. Whether for drill use at fire school or for your new truck—specify BROWDER. Get one on your 1937 budget. Prices on request.

PRICES and complete information on request.

● Specify BROWDER Life Nets on all your new trucks. Your neighbor uses them; Your favorite dealer sells them.

CORY-PATTERSON MFG. CO., Greenfield, Ohio

Sole makers of BROWDER Nets for half a century.

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When buying leader line equipment, see us for prices and particulars on Colt Patent Shut-off Nozzles and Quarter Turn Shut-Off Leader Line Siamese Connections.

Cut shows Colt Little Giant Play Pipe with our patented ladder hook feature used with our regular Colt Shut-off Nozzle. Patented April 28, 1936.

We also manufacture Suction Hose Connections, Gate Valves, Chemical Hose Nozzles and Couplings, Siamese Connections and all sizes of Reducers and Nipples.

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DOUBLE ACTION

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WITH FLASHING LIGHT AND A NEW TONE ROAR

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WITH or WITHOUT ELECTRIC BRAKE

CONSIDER THESE FEATURES:

- Streamlined beauty combined with rugged construction and durability.
- A Siren Roar combined with Flashing Rays of Light that can be heard and seen.
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- Flashing light can be operated with siren roar or independently.
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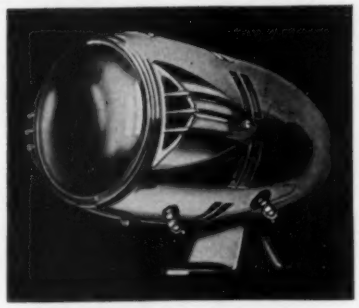

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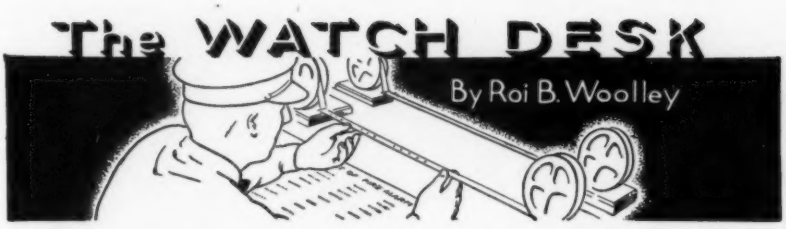

Our inquiring reporter overhauls the firemanic news of the day.

No Wisecracks, Please

Acting Fire Chief William Fallon, West St. Louis (Ill.), cruising about town hunting fire hazards found a fire. He stepped on the gas and with siren wide open, and bell clanging took the wide path at full speed. At first filling station he whipped in and called for water, quick. The fire was under the rear seat of his car.

500 Kids See Free Show Because of Fire

A fire starting in basement of Eagle Theatre, motion-picture house, New York City, caused manager to switch on lights, announce "there was a small fire in basement which would be quickly extinguished," and asked audience to leave quietly, assuring them they might return without charge when fire was out. There were about 500 children in section set aside for them. They raised stormy protest but management, with police and firemen got 'em out safely. However, they took their stand close to doors, determined to be first to return. Word of the situation quickly spread, and when doors were re-opened a spontaneous stampede filled theatre resulting in about 500 unpaid childrens' admissions.

Firemen Drop From Heaven

Returning from Firemen's Carnival Parade at Lewes (Del.) recently, Seaford Vol. F.D. came upon auto afire on road four miles from nowhere, between Georgetown and Seaford. Fire was getting away from owner and wife, despite their efforts to bury it with sand, when Vol's came to rescue. Quick attack with a 2½ gal. s.a. tank did the trick. Second Ass't Chief in charge applied first aid to Mrs. Owner's hand, readjusted wiring, had the boys give wrecked car shove till it started again. Mr. & Mrs. Owner thanked Vol's who, they thought, came straight from Heaven to rescue.

Quick! The Trench Helmets!

According to Cap. W. R. Mendenhall, Eng. 11, Long Beach (Cal.) F.D. war's all right in Europe but hell in Long Beach. Seems his company was working on grass fire in vacant lot when suddenly air was full of flying bullets. In nine seconds flat, all firemen were flat behind steel body of their truck. They "dug in" until fire burned self out. Somebody had "playfully" stored revolver cartridges in grass!

Curing the Traffic Evil

When siren shrieks in Raton (N. M.) next time, at least 60 motorists will be conspicuously absent from scene of the fire. The fire lads, tired of charging through congested traffic, had flares touched off in vacant lot. Then they answered "call." So did police. So did 60 and more motorists, who, constabulary said, were within 300 feet of fire-fighting equipment "contrary to law," and must tell it to the judge. They did. Local exchequer benefited—so did F.D.

Extinguisher Fails—Pants Burn

J. L. Webb, Cleveland (O.) assistant manager, large furniture company, asked for demonstration before ordering new fire extinguishers. Salesman built bonfire. Gust of wind blew flames toward Webb, whose pants caught fire. He ripped 'em off, fled pant-less into store. Salesman reported "no sale."

Roaches and Bugs Prove Alibi

Firemen of Hagerstown (Md.) arrested Dewey Batt on arson charge after his home was gutted and he was nearly overcome by smoke, because kerosene-soaked rags were found in hole dug into wall of a room. Later, Justice J. D. Dunn dismissed arson charge, following hearing at which it was testified it was a common practice of tenants of the double brick dwelling to liberally use gallons of gasolene, kerosene, etc., about the building in combating bugs. "Nuts Bugs" say the disgusted firemen.

Our New England Correspondent Reports:

Here are some false alarm items: Fire Chief John Kessler, Troy (O.), went out to paint up some weatherbeaten alarm boxes. As he put finishing touches to box 27 engines came roaring up. "Musta been too vigorous with the brush," Chief explained to the boys.

* *

Firemen streaked through business section of Modesto (Cal.), found J. H. Johnson, farmer, beside alarm box. "Awfully sorry," he said, "I shoved letter into that red box. Thought maybe the Democrats had put up some newfangled mail boxes."

* *

Queenie, a milkman's horse affectionately rubbed her nose against nice red box on Madison Ave. (N. Y. C.). Lever went up, firemen rushed out, and Queenie neighed delightedly as irate officers looked for fire. No arrests.

* *

Robert Upshur, Greenwood (Mass.) —another N.E. correspondent—tells us that firemen of his community are still trying to find person who insisted on using alarm box to post letter. Despite witnesses, culprit and letter had disappeared before firemen-postmen arrived.

* *

Is Coral Gables (Fla.) the only town in America with combination police-fire force? 18 men in combined department, members of which are regularly assigned to either police or fire duty. Police workers have 9 hour shift; fire workers, 48 hours on duty, 24 hours off. A "police emergency" makes them all policemen and a fire alarm call brings all policemen to fire duty.

* *

Tracey Hill, Troy (N. Y.), was sleeping soundly at 4.20 a.m. when police entered his room, awakened him, told him to get out of bed. Hill drowsily complained. Next moment, however, he leaped from bed wide awake. His bed was afire.

* *

Roswell Swett, Pond Court, Leominster (Mass.), rushed into central fire house all in a sweat. Said to firemen he smelled smoke in WPA office, rear of fire house. One crew rushed to that building. While they hunted fire, John Maillet, another firemen traced smoke to seat of Swett's pants, which were the "seat" of the blaze.

When "Blue" Means Fire

John Ryan, Rockville Centre (L. I. N. Y.), says that F.D. of that city and others in district are experimenting with use of royal blue lights on their fire alarm boxes, fire houses and trucks, as step toward establishing a uniform and distinguishable color for all units of fire service as against the old red, and orange-red colors, heretofore identified with the fire service. Contention is that the increasing use of red in electric signs and on all types of emergency vehicles is confusing and firemen have lost identity.

F. D. News Flashes

With new government buildings in capital worth hundreds of millions, Uncle Sam is taking stock of fire hazards. Federal Fire Councils, organized, April, 1930 is undertaking systematic inquiry into all fire hazards, examining fire-protection equipment, manual and automatic, etc. . . . Fire Commissioner John J. McElligott (N.Y.F.D.) who, by the way, was given referendum vote of people at last election to install 8-hour day for firemen, reported last month 121,457 old-law tenements had been inspected to reduce fire hazards, 300 uniformed firemen impressing owners and tenants with hazards. Previously his men found 1,005 out of 1,832 dance halls of city inspected, to have violations.

Note to contributors: If you do not read your news contribution in the next issue of FIRE ENGINEERING don't despair —if it's suitable it will ultimately find its way into print.

Editor, Watch Desk.

WHAT DO YOU KNOW?

The Editor of "The Watch Desk" welcomes contributions from readers of FIRE ENGINEERING that briefly give facts about interesting, odd things that have to do with fires, fire-fighting, etc. Address "Editor, Watch Desk."

Extent of Damage Done by Fire in Summer Resort Area of Milford, Conn.

Fire Sweeps Summer Colony

Eight dwellings and cottages on Seaview Avenue, in the densely populated summer resort section of Walnut Beach, Milford, Conn., were destroyed by a three-alarm fire which threatened the entire area. Several firemen received minor injuries combating the flames and one homeowner was taken to a hospital when overcome by smoke while attempting to save his belongings.

Damage to the buildings was $30,000. The fire, one of the worst in this section in many years, left three families homeless. Five of the buildings were unoccupied. Fire started in an unoccupied six-family wooden structure on the north side of Seaview Avenue. Flames, fanned by a wind of gale velocity, swept rapidly across the street to opposite houses and then were carried down the street as the wind shifted.

Fire was discovered by a beach resident at 6:11 p.m. and a telephone alarm brought two Milford fire companies to the scene. Upon arrival Chief Lewis F. Stowe immediately ordered a second and third alarm, which called all companies, with the exception of Engine 5, in the northeast section of the town.

The strong wind carried sparks and embers for long distances and handicapped the work of the firemen in subduing the flames. Sparks from the fire caused a roof blaze one-half mile away. The wind was so strong that most of the embers were carried over the roofs of dwellings and beach concessions and dropped into Long Island Sound. William M. O'Hara, President of the Milford Fire Commission, who was one of the early arrivals at the scene, praised the firemen highly for their efforts in fighting the fire. The firemen used ten lines, laying 5,650 feet of 2½-inch.

THOMAS F. MAGNER.

N. Y. Finds Many Hazards

Firemen of the New York Fire Department made 121,457 inspections of old-law tenements from the middle of November, 1935, to October 1, 1936. Commissioner John J. McElligott announced that 16,701 tenements were found to have fire violations.

Many of the older tenement houses in New York City are of typical old-law tenement construction.

The inspectors found that 528 tenants were storing oil illegally.

Where rubbish accumulations were found, the inspectors notified the occupants and the Superintendent. If the rubbish was not removed at the time of the reinspection, a summons was issued to the owner of the building. Where oil was illegally stored, and it was not removed immediately, summonses were served. When extra hazardous conditions were found, the respective Deputy Chiefs were notified and they in turn communicated with the Police and Tenement House Departments.

WHAT'S BURNING

THE following list includes fires of $50,000 loss and over in the United States and Canada, for the month of October, 1936. These figures, compiled from the telegraphic reports, are based on estimates made at the time, and are subject to later investigations and consequent revision. Taken as a whole, however, they are an approximately correct view of the losses incurred. The figures represent loss in thousands of dollars.

Month Ending October 31	Loss in Thousands of Dollars
Montclair, N. J.—E. E. Leach storage warehouse damaged	$ 50
Conshohocken, Pa.—Store of Campbell Furniture & Storage Co.	55
Waco, Tex.—Liberty Bldg. and adj. property	235
Youngstown, Ohio—Furniture warehouse of Block-Light Co.	50
Eagle Pass, Tex.—Yolanda Hotel and adj. business property	200
Wenatchee, Wash.—Business property damaged	250
Chippawa, Ont.—Roman Catholic Church destroyed	70
Zanesville, Ohio—Fitz & Pollock Jewelry Store, adj. property	50
St. Anne de Beaupre, Que.—Hotel property and Catholic Shrine	250
Oroville, Cal.—Plant of Swayne Lumber Co., damaged	250
San Francisco, Cal.—Two army commissary bldgs. destroyed	80
Rochester, N. Y.—Ambassador Apartments damaged	50
Lachine, Que.—Plant of Montreal Boat Builders	400
Huntsville, Tex.—Property of Smither Grocery Co.	50
Edinburg, Tex.—Pantano Petroleum Co. oil and gas well	50
Hollister, Cal.—Whse. of Lathrop Hay & Grain Co. destroyed	50
St. Johns, Mich.—Methodist Episcopal Church destroyed	50
Saginaw, Mich.—Property of Saginaw Hardware Co., damaged	70
Greenville, N. C.—Fertilizer plant of Blout-Harvey Co.	50
Falconer, N. Y.—Property of Excel Metal Cabinet Co.	100
Aberdeen, S. Dak.—Gamble store located on Main St.	60
Salt Lake City, Utah.—Hotel property, downtown section	60
Marshfield, Wis.—McKinley High School destroyed	80
Conroad, Mont.—Elevator property destroyed	50
Newark, N. J.—Four one-story garages destroyed	80
Minneapolis, Minn.—Calvary M. E. Church destroyed	50
San Diego, Cal.—Whitney's Dept. store and National Dollar Store	800
Quebec, Que.—Tanks and whse. of Canadian Oil Co.	200
Ste. Dorothee, Que.—Church destroyed	80
St. Louis, Mo.—Bldg. occupied by Volz Fire Clay Co. destroyed	70
Thief River Falls, Minn.—Northern State Bank bldg. adj. property	200
Randolph, Mass.—First Congregational Church destroyed	80
Sauk Center, Minn.—Business building destroyed	50
Ashland, Ky.—Plant of Standard Slag Co. destroyed	80
Muskegon, Mich.—Property of Norge Corporation	170
Moorehead, Minn.—Three bldgs. in business district	70
Detroit, Mich.—Yard of Currier Lumber Co., destroyed	200
Gloucester, Mass.—Cape Ann Anchor Works destroyed	400
Carnegie, Okla.—Yards of Stephenson-Browne Lumber Co.	75

Brookline to Buy Pumper

The town of Brookline, Mass., has voted an appropriation of $13,000 for purchase of a new motor pumping engine for the Fire Department upon recommendation of Chief Selden R. Allen.

Chief Gieselman Honored by Fire Surgeons

Chief Edward W. Gieselman, Syracuse, N. Y., was elected an honorary member of the International Association of Police and Fire Surgeons and Medical Directors of Civil Service Commissions, at the three-day convention held at New Haven, Conn. Also elected to honorary membership at that time was Dr. Stanhope Bayne-Jones, Dean of the Yale University School of Medicine, and Police Chief Thomas Carroll, Syracuse.

Dr. Harry M. Archer, New York Fire Department, responded to the welcome for the association. He explained the value of the association and told how it was possible for a fireman who was injured in a football game in New York to travel to the coast, and receive medical attention at the various places where the train stopped. Dr. Archer was elected Secretary of the association, and Dr. Karl B. Bretzfelder, New Haven, President.

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LIN-LINED FIRE HOSE

THIS hose will stand up for many a four-year term—and what's more it will become more and more popular with modern-minded fire departments who are ready to adopt it. There is no rubber lining to deteriorate and you can't burn a foot of it when fully charged. It's the newest, most practical hose you can buy. There's a lot more we can tell you about it. A request from anyone interested will bring full particulars by return mail.

The MODERN FIRE HOSE
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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933, OF FIRE ENGINEERING, published monthly at New York, N. Y., for Oct. 1, 1936.

State of New York }
County of New York } ss.:

Before me, a notary public in and for the State and county aforesaid, personally appeared I. H. Case, who, having been duly sworn according to law, deposes and says that he is the business manager of the FIRE ENGINEERING and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are: Publisher, Case-Shepperd-Mann Publishing Corp., 24 West 40th St., New York, N. Y.; Editor Fred Shepperd, 24 West 40th St., New York, N. Y.; Managing Editor, Fred Shepperd, 24 West 40th St., New York, N. Y.; Business Manager, I. H. Case, 24 West 40th St., New York, N. Y.

2. That the owner is: Case-Shepperd-Mann Publishing Corp., 24 West 40th St., New York, N. Y.; I. H. Case, 24 West 40th St., New York, N. Y.; Fred Shepperd, 24 West 40th St., New York, N. Y.; Karl M. Mann, 24 West 40th St., New York, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

I. H. CASE,
Business Manager.

Sworn to and subscribed before me this 1st day of October, 1936.

(Seal) ELLEN E. DUNCANSON.

(My commission expires March 30, 1938.)

Boston Adds New Salvage Car

The Boston Protective Department recently placed in service one of the finest pieces of covered fire apparatus in New England. This truck is the largest salvage wagon in America and has already proved its worth so conclusively that two additional units will be ordered to replace open type patrol cars in the other two stations of the department. The covered wagons of the Boston Rescue Companies were the pioneers of this type, having been installed in 1930.

The new wagon was built on a standard Model 51 Ford V 8 1½-ton chassis, and the body was constructed by James A. Kiley & Sons, of Somerville, Mass., from designs worked out by Superintendent Charles W. Gooding and Director Alfred N. Miner, of the Protective Department. The body is twelve feet long and six feet wide with seats along the sides of the interior for the men. Lockers are underneath the seats. There is space for sixty salvage covers as compared to forty-one carried by the old type wagons.

In addition to the salvage covers the following items of equipment are carried: 6 squegees, 4 buckets, 4 sponges, 4 shovels, 2 fire axes, 2 life lines, 2 extension ladders, 2 extinguishers, 2 brooms, 1 top maul, 1 hand saw, 1 battering ram, 1 crow bar, 1 Callahan jimmy, 1 ceiling pike, 1 roof hook, 2 balls of marlin, 1 roll of tar paper, 1 Carpenter light, 1 Wheat light, 1 first aid kit, 1 canvas bag of 10 penny nails, 1 canvas bag of 6 penny nails, 1 canvas bag of waste and rags, 1 can of oil, 1 bag of automobile tools, 1 automobile jack, 1 box of caps and plugs, 2 roof covers, 1 tool bag containing 3 padlocks and 3 keys, 10 hasps, 10 staples, 2 sheath knives, 2 hose spanners, and 2 cotton hooks, and 1 sprinkler box containing sprinkler heads, wrenches, wires and seals.

The wagon is fitted with a bell, a B and M siren, and a Mars red light. It has Flentje shock absorbers and Fiske tires. There is a DeLuxe oil filter on the motor. A Shawmut flood light is carried with electric extension wire and plug-in socket.

The chassis and body in this new piece of apparatus are two distinct units which makes it possible to replace the chassis if and when necessary without replacing the body which can be transferred without change to any new standard chassis.

Besides the lockers under the seats there are compartments extending across the truck just back of the drivers' seat which open from the outside. The chief advantage of the new wagon is that the men when leaving warm quarters in response to an alarm and when returning from a fire, wet and tired, will be protected from chilly winds and bad weather. Another advantage is that the various compartments can be locked up when at a fire and the private ordinarily left to guard the truck is released for other duty.

In addition to the purchase of the new apparatus, other improvements have been made by the Boston Protective Department including the modernizing of the three stations by installation of new stoves, electric refrigerators, and cupboards for dishes and kitchen utensils.

The new wagon is at Station No. 1, 3 India Square, in the down town section of Boston, and is in charge of Captain Joseph F. Sullivan. It is hoped to have Stations 2 and 3 equipped with new sedan apparatus by the first of the year.

HARRY BELKNAP.

New Salvage Car for Boston, Mass.

Cooperation Emphasized by Westchester Chiefs

Cooperation and mutual assistance was the keynote at the first meeting of the season of the Fire Chiefs Emergency Plan of Westchester County, which was held at the fire house of Hose Company No. 2, Barry Avenue, Mamaroneck, N. Y., on Wednesday evening, October 21. There were 61 members present. The Plan was welcomed by Chief Harriott and former Chief Lemon, of Mamaroneck.

Judge Hoop, Bronxville, gave an interesting report for the Legislative Committee, and assured the members that the differences as to the law on benefits for injuries to volunteer firemen would be thrashed out with the New York legislature and proper legislation on this subject would be passed, if he could possibly bring that about.

President Woolley welcomed Chiefs Odell, Rye, and Schroeder, Harrison, who were elected members. Five others were also elected to membership.

Chief LeVino, Weaver Street Fire Department, Chairman of the Educational Committee, called on Deputy Chief Benrimo, who described a fire in the Bonny Briar Golf Club's house. It seems that the Mamaroneck whistle had failed to blow, and when the Chief arrived at the fire, at night, there was only himself and a driver to handle it. The club house was looked upon as one of the worst hazards in that neighborhood. It was quite late, and there were no telephones available. Then, just as he was at a loss what to do and the fire was rapidly gaining in intensity, the Larchmont crew arrived with its truck, sent by Chief Pedersen, who had been notified of the fire, and the club house was saved.

Another case was that of a woman overcome by gas. More oxygen was needed by the hospital, and in six minutes the White Plains Rescue Truck arrived with the necessary supply, saving the woman's life.

Chief Brennan, Pelham Manor, suggested that fifteen minutes on the air be devoted to a fire prevention talk during Fire Prevention Week, next year. Chief Griffen, White Plains, thought that there should be a local speaker in each town.

On invitation of Chief Brennan, the Plan decided to hold its next meeting at Fire Headquarters, Pelham Manor, on the evening of Wednesday, November 18. Refreshments were served by the local department, after the meeting.

Harris, Acting Chief of Akron, Ohio

Clarence E. Harris, Second Assistant Chief of Akron, Ohio, has been named Acting Chief until December 1 when the resignation of Chief William F. Woehler becomes effective. Chief Harris has served in the department for thirty-three years.

Chief O'Hearn Marks Anniversary

Chief John W. O'Hearn, of the Watertown, Mass., Fire Department, completed forty-one years of service with the department on October 1. He has been Chief since 1912 and is Secretary of the New England Association of Fire Chiefs.

HARRY BELKNAP.

Box 52 Re-Elects Parker

P. Hildreth Parker, Belmont, Mass., was re-elected President of the Box 52 Association, Inc., Boston, at the annual meeting, which was held at the plant of the Rockwood Sprinkler Company in Worcester, the evening of October 21.

The other officers chosen are as follows: Frederick Kurth, Vice-President; C. Elmer Gane, Secretary; George W. Austin, Treasurer; and Bartlett Tyler and James Moulton, Directors.

The members went to Worcester in a special bus from Park Square in Boston and were served a buffet supper at the sprinkler factory, after making a tour of inspection of the premises, and witnessing several demonstrations.

Meetings will be held during the winter as usual on the third Wednesday evening of the month, with luncheons on the first Wednesday each month. Dr. Harry M. Archer, Honorary Medical Officer of the New York Fire Department, will be the speaker at the November meeting, which will be held in the Boston Chamber of Commerce Building on November 18.

HARRY BELKNAP.

NEW SUPER PUMPERS TO SERVE AS HIGH PRESSURE PUMPING STATIONS

Conditions in Los Angeles, California, Require Unusual Facilities in Fire Fighting — Lack of High Pressure System Will Be Met by New Apparatus

By Chief Ralph J. Scott
Fire Department, Los Angeles, Cal.

Chief Ralph J. Scott

MY department has never desired to be the first to promote innovations, nor the last to abandon the practice of years. However, conditions not present in many metropolitan cities of the United States have impelled us to seek unusual methods of relief. In my city there is no high pressure water system; our metropolitan, high value and industrial districts are scattered to such an extent that there will probably never be one. May I say as a preliminary that if the advantage of a good high pressure system had been available to us, this present idea of a substitute for such a system, or as an extension to some existing system, might not have taken shape in our minds.

Time Had Arrived for Heavier Streams

Our experience with heavy streams has thus far been confined to the performance of our largest fire boat, to deluge sets operated by several pumpers, and occasionally, the water tower. We felt that the time had arrived when some means must be provided to give us heavier streams when needed. We have gone the limit in the other direction, and still favor small hose for close-in work; this has not, however, led us into the view that large volumes of water, forcefully applied, are not sometimes necessary to save the day.

We can not alter the physical characteristics of our city very materially. Our streets were laid out by another generation, and that generation could not foresee the fact that within a short space of years every family would have one or two automobiles adding to the congestion of these same streets.

Thus, the Fire Department began to feel that it was being pocketed; that it had facilities which it was not sure that it would be able to use when the occasion demanded. Traffic congestion, at its worst during the exact hours when the fire hazard is at its highest, seriously hampered the free movement of apparatus. Larger buildings began to replace smaller ones; modern industrial hazards multiplied, and new occupancies presented new problems. A recent large fire convinced us that a change in procedure must be made in the interest of fire safety. We faced the problems that confront every other large city, in varying degree. And for the first time we keenly missed a high pressure water system, and set about to find something to supply the lack.

In line with the subject of this paper, we are admitting the deficiency and endeavoring to correct it. For any city having conditions comparable to those of Los Angeles, I believe that I can establish a good case for the Duplex 2,000-gallon pumping unit, which will be the main reference of this paper.

Performance to Compare with That of Multiple Apparatus

We are buying two identical pieces, each of which we will compare in actual performance with multiple pieces of the standard type. To make this clear I will present this comparative performance record; the first being established by experience, and the second guaranteed by the specifications:

Present Pumpers

1,000	gallons	per	minute	at 120	lbs.
500	"	"	"	at 200	lbs.
333	"	"	"	at 250	lbs.

Duplex Pumping Units

3,000	gallons	per	minute	at 120	lbs.
2,000	"	"	"	at 200	lbs.
1,500	"	"	"	at 250	lbs.

A comparison of the foregoing will show that at comparatively low pressure the Duplex pumping unit may be expected to deliver three times the volume of the usual 1,000-gallon pumper; efficiency increasing at higher pressures, to give four times normal delivery at 200 lbs., and nearly five times at 250 lbs. This maximum capacity may be seldom needed. However it is there as reserve.

Advantages of the New Apparatus

In practice, we expect that this Duplex can respond to the scene of a fire as readily as the standard unit, as the increase in weight and size, over the usual equipment, is quite immaterial. It will centralize our pumping equipment at the fire, thus making for shorter average hose lays, and enabling us to utilize the nearest sources of water supply to the very fullest extent. It is now standard Fire Department practice in the metropolitan district of this city, to lay 3½-inch hose lines from the pump to the fire. This new equipment will enable us to realize the full benefit from the use of this large hose.

The necessity for relay work should be materially reduced, also friction loss, due to the simplification of lines. We will also minimize delay in connections. Once established at hydrant, there will be no problem of making room for additional engines, because the Duplex will be able to utilize the full delivery of that hydrant if required to do so. It will provide volume and pressure for the heaviest streams, and will operate the largest appliances we have, without resorting to siamese. Uniform operating pressure may be maintained on all lines connected to the unit, or if conditions require, one pump may work at a certain pressure and the other at greater or less, to meet a special situation. Large volume at high pressure will furnish us with long range streams when needed.

The first companies through traffic on first alarm always have less difficulty than those called on greater alarms. This situation we hope to alleviate by the fact that the necessity for greater alarms will not so frequently occur, with the Duplex on the job. And the first cost of the new equipment, which is admittedly an important item, will be compensated for by the fact that smaller equipment will be released for duty in locations more remote from the metropolitan district.

Apparatus to Be Double Powered

Our Duplex units will be double powered, one motor for driving the apparatus and to operate one pump at fire, the second motor being exclusively for the operation of the second pump. Both motors will be identical, 12-cylinder, 4-inch bore, N.A.C.C., rating not less than 76.8 horse power, and capable of developing 225 brake horse power at 2,500 r.p.m. There will be six suction intakes, or three for each pump. They will be placed two on each side, and two in rear of apparatus. Intakes will be 4-inch standard when delivered, with provision made for using any suction desired, up to 6-inch. Discharge manifolds will have by-pass valves, so that the entire discharge of both pumps may be as from one unit, or from each unit separately, according to volume and pressure needs. Eight 3½-inch discharge gate valves will be furnished.

To Be Provided with Driver's Cab

The apparatus will be provided with all-steel five-window driver's cab, equipped with shatter-proof glass. We have been thinking of this matter of driver's cab for several years, and have decided to adopt it in the interests of health conservation and the greater safety of members. Gasoline tank capacity will be 300 gallons, which is an amount sufficient to provide for ten hours continuous work at capacity after a 30 mile run. The specifications include the usual requirements as to maintenance of a complete stock of spare parts on the Pacific Coast for replacement purposes. The Los Angeles Fire Department is to be the judge of quality of workmanship and the ability of the

The cheapest health insurance you can buy this winter will be the lasting protection of the

BODY-GUARD BUNKER SUITS

Suits sent on approval. Write for details. Catalog on request.

Body exposure while fighting winter fires is a serious menace to health. Nothing you can buy will give you any more real and lasting protection than a BODY-GUARD SUIT. They are big and roomy, last for years and their price is as low as any garment of anywhere near equal merit. Made of rubberized canvas duck, inter-lined with rubber and warm blanket lined. Sheepskin or corduroy color. Reinforced shoulders and pockets. Write for our approval offer and terms.

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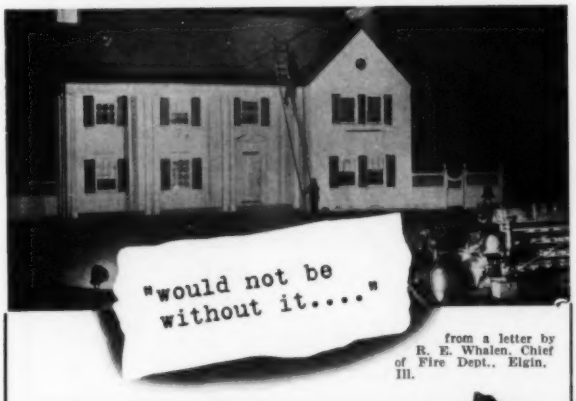

from a letter by R. E. Whalen, Chief of Fire Dept., Elgin, Ill.

For speeding-up work—for protecting men on ladders or roofs—for rescues—drowning recoveries—overhauling—use Homelite portable floodlighting. Weighing only 89 pounds complete with built-in gasoline engine, this complete plant can be set up instantly *wherever needed*. You can put it in front, in back or inside a burning building. You can set it up in a row boat or in a field. You can have at all times enough brilliant floodlighting to do your work quickly and efficiently.

One man can carry a Homelite Floodlight plant

Homelites are low in cost yet they generate 1250 watts. They start instantly. Hold voltage at 110 automatically. Need no attention after starting. They are completely waterproof, dust-proof and oilproof.

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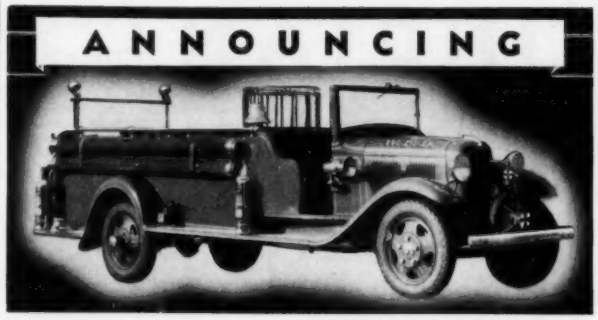


Two New BARTON Fire Pumps
in Our F-Type, Direct-Drive Economy Line

Both Pumps Underwriters' Tested

F-500, 500 GALLONS
F-600, 600 GALLONS

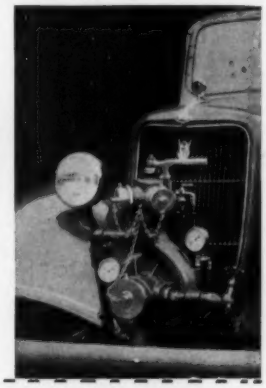
Pumping from suction at 120 pounds pressure, 500 gallons per minute with the new F-500, and 600 gallons with the new F-600 . . . one-half these rated capacities at 200 pounds . . . one-third capacities at 250 pounds! Here indeed are fire pumps you can be proud to own and use—**large enough to meet any emergency. And they are absolutely complete,** even equipped with Siamese discharge valves as shown at right.

All Barton F-Type Direct-Drive Fire Pumps, including these two new ones, are priced SO LOW that practically every community can afford this dependable protection. Then, too, Barton Front-Mounting is a big economy feature. **You can install any Barton Fire Pump without making a single chassis alteration—total mounting cost but a few dollars.**

Read our Bulletin 95, Edition 2. **It also describes the F-4 and F-5 Pumps which are still lower priced.** Note how all of these Barton F-Type Direct Drive Pumps include every feature found on our Famous U-Type Pumps, except Gear-Drive. They are centrifugal type, pumping dirtiest water without damage—automatically primed. Use Coupon below.

BARTON U-Type Fire Pumps
With Our Famous Built-in Gear Drive

The very finest Front-Mounted Centrifugal Fire Pumps—350, 400, 500 and 600-gallon sizes—ALL UNDERWRITERS' TESTED—automatically primed!



Every U-Type Barton is designed with our built-in Gear-Drive, permitting the truck motor to operate at about ONE-HALF pump speed. The advantage is obvious. **You can turn a U-Type Pump wide open—get 250 pounds pressure—AND THE MOTOR LOAFS ALONG!** You protect your motor completely when you select a Barton U-Type Pump with this motor-speed-reducing feature.

There are thousands of these Barton Pumps now on active duty—and to our knowledge NOT ONE has ever failed. Check Coupon for Bulletin 75, Edition 4.

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A complete line, including
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THE yearly maintenance cost should not be overlooked when selecting the pump for your next fire engine.

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CRACKERJACK FIRE HOSE

The hose with an unsurpassed reputation for QUALITY and SERVICE that has made it the STANDARD OF THE WEST for over 25 years.

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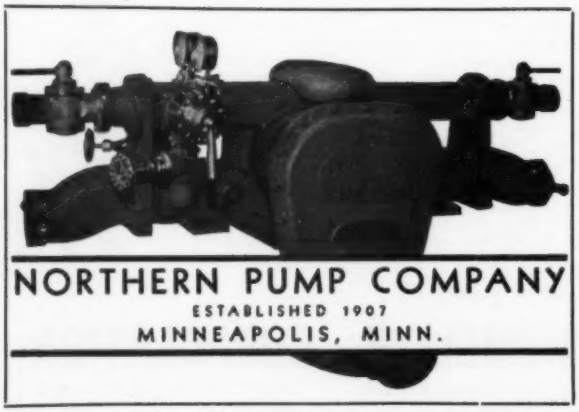


NORTHERN PUMP COMPANY
ESTABLISHED 1907
MINNEAPOLIS, MINN.

apparatus to fulfill the requirements of the specifications.

All Objections Satisfactorily Answered

Officers of this department have conferred on several occasions to discuss the probable advantages and possible disadvantages of this new type of equipment, in an honest endeavor to determine the justification for its purchase. All objections have been answered to our satisfaction. The first cost will be considerable, certainly a disadvantage unless positively offset by an economy advantage. We see economies in man power and in the release of other equipment that will more than balance the account. Objections as to size and weight fall by the fact that these increases are immaterial. Far more impressive in size and weight are the industrial vehicles which have made their appearance upon our highways in recent years. Hose-carrying capacity is restricted, but that does not seem to be a fatal or even an unusual defect in this class of apparatus. We do not anticipate heavy maintenance costs as there are no new mechanical principles or devices involved.

Unexpected Possibilities Developed by Conference

In conference, some rather unexpected possibilities were brought to light and seem worthy of discussion. The great volume of water delivery will make it a very practical device for moving quantities of water from unwanted places, from flooded basements for instance. It might even become an adjunct for the supply of domestic water to mains, in an emergency. It might go a great ways toward supplanting the large streams of the fire boats if required by some entirely unforseen contingency, and its relation to high pressure systems I have already touched upon.

What the Apparatus Will Accomplish

At the expense of repetition, I am presenting an estimate of expected advantages of this apparatus in condensed form. This estimates does not entirely represent my own views. It is the result of the officers' conference hitherto mentioned, and is entered here for the purpose of review, or for discussion in the event that some statement may require further explanation:

Duplex Pumping Unit

Performance:

1. Is average equivalent to four 1,000-gallon units.
2. Provides volume and pressure for heaviest streams.
3. Extra pump available in case of accident or failure of other.
4. Cuts down friction losses.
5. Permits maximum flexibility in volume and pressure.
6. Promotes full efficiency in use of larger hose.
7. One unit operates heaviest appliances.
8. Permits maintenance of uniform pressures on all lines.
9. Allows use of double suctions.
10. Large reserve power plant insures full roadability.
11. Fuel capacity adequate for 10 hours at capacity pumping.
12. Increases range of streams.
13. May take water from draft and hydrant simultaneously.

Convenience:

1. Source of water at fire is centralized.
2. Makes shorter lines practicable.
3. Utilizes maximum delivery from available water supply.
4. Suction intakes provided on either side and rear.
5. Reduces necessity for relay work.
6. Simplifies laying of lines.
7. Permits independent operation of either pump at pressure or volume required.
8. Facilitates quick connection to source of water supply.

Economy:

1. Conserves man power and housing space.
2. Reduces mechanical maintenance costs.
3. Reduces damage to hose by movement of apparatus.

Traffic:

1. Minimizes traffic interference by reduction of units responding to fire.
2. First companies to respond encounter less traffic interference.
3. Reduces apparatus congestion at hydrant and at scene of fire.

Miscellaneous:

1. Increased capacity tends to lower insurance rates.
2. Best possible substitute for high pressure system.
3. Practically extends any existing high pressure system.
4. Adaptable for augmenting domestic water supply in emergency.
5. May supplant fire boats in emergencies.
6. Releases smaller units for more suitable locations.
7. Will foster improvements leading toward greater efficiency of operations.

We are buying two of these pieces on the strength of the conclusions which we have arrived at, of which the foregoing is a brief resumé. We trust that their performance in actual service will justify our judgment. Nothing further than this can I say at this time. The American La France-Foamite Corporation are building the machines.

(Excerpts from a paper read before the annual convention of the Pacific Coast Association of Fire Chiefs.)

Ex-Chief O'Brien Dead

Ex-Chief William O'Brien, of the South Hadley Falls, Mass., Fire Department, died on October 1 after a short illness at his home. He was born in Westfield and was for many years an inspector for the Holyoke Street Railway.

HARRY BELKNAP.

Dougherty Guest of Massachusetts Chiefs

Thomas F. Dougherty, retired Assistant Chief of the New York Fire Department, was a guest at the meeting of the Fire Chiefs' Club of Massachusetts, which was held on October 21 in the Parker House, Boston. The meeting followed the customary luncheon.

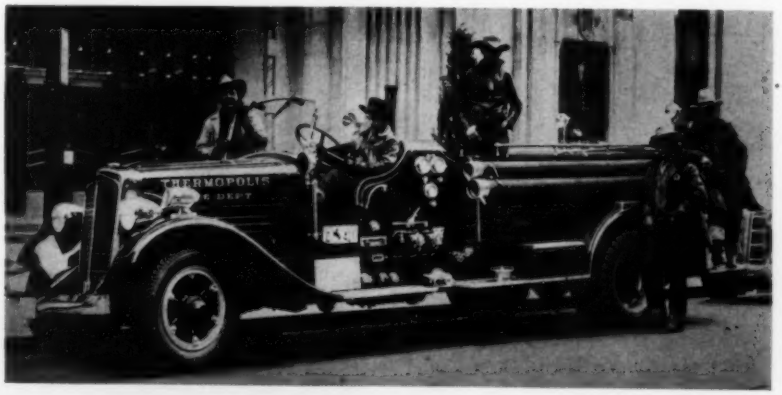
Chief Charles L. McCarthy, of Worcester, presided. The principal speaker was C. W. Roulon, of the Underwriters' Laboratories in Chicago. He described the work of the laboratories and answered questions of the Chiefs. Mr. Roulon was introduced by Alfred N. Miner, Vice-President, Massachusetts Safety Council, who was seated at the head table at the luncheon with President McCarthy, Secretary William H. Hill, of Belmont, and Chief Richard A. Magee, of Truro.

Ex-Chief Orville O. Ordway, of Reading, who retired recently, introduced his successor, Chief Hugh L. Eames. The subjects discussed at the meeting included the new covered type of fire apparatus, merits of rotary, centrifugal, and piston types of motor pumping engines, and the need for a small, easily operated aerial ladder truck.

The following spoke briefly: Chief Selden R. Allen, Brookline; Chief William C. Mahoney, Peabody; Chief Frank Newman, Melrose; Chief George L. Johnson, Waltham; Chief Ray D. Wells, Falmouth; Chief Fred A. Clark, Attleboro; Chief Herbert C. Root, Springfield, and John Campbell, of the Edison Electric Illuminating Company.

The November meeting will be held in Worcester. The December meeting will be the annual Christmas party and ladies' day in Boston.

HARRY BELKNAP.



Fire Apparatus Makes 2,000-Mile Overland Trip to Thermopolis, Wyo.

An unusual method of delivery was employed in completing the order of a 500-gallon Ahrens-Fox pumper for Thermopolis, Wyo. As a reward for having a state-wide volunteer fire department contest, five members of the Thermopolis department were given an expense-paid trip to Cincinnati by the town of 3,000 population. At the plant of the apparatus builder, the men received instruction in the operation of the pumper, and then drove the unit back to Wyoming, a distance of about 2,000 miles. Although Thermopolis has only a population of 3,000, it answers fire calls within a radius of forty miles. The firemen answer about twenty-eight alarms a year.

CLASSIFIED ADVERTISING

Bids Wanted, For Sale and Help Wanted $5 *per inch. Position Wanted,* $2.50 *per inch*

Wanted

Base or whole pump for Robinson Fire Engine. Three cylinder, 5¼" diameter by 8" stroke. Built about 1911. Address: Clearspring Volunteer Fire Company, Clearspring, Maryland.

CONVENTION DATES

Nov. 18.—FIRE CHIEFS' EMERGENCY PLAN. Next Meeting, Fire Headquarters, Pelham Manor, N. Y. Secretary, Capt. Walter M. Dawkins, P. O. Box 341, Port Chester, N. Y.

Nov. 18—FIRE CHIEFS' EMERGENCY PLAN OF FAIRFIELD COUNTY. Next Meeting, New Canaan, Conn. Secretary, John Moehring, Toms Road, Stamford, Conn.

Sept. 14-15, 1937 — IOWA FIREMEN'S ASSOCIATION. 60th Annual Convention, Atlantic, Ia. Secretary, Paul A. Soener, Independence, Ia.

Portland Has Effective Fire Prevention Week

Through the combined efforts of the Portland Fire Department, the Chamber of Commerce and the Federal Housing Administration, Fire Prevention Week was observed in a very enthusiastic and effective manner in Portland, Maine, under the direction of Chief Oliver T. Sanborn.

Starting in mid-September, Chief Sanborn, with the co-operation of the local Chamber of Commerce and the American District Telegraph Company, arranged a fire control and prevention school for watchmen, janitors and building engineers. It ran through four Tuesday afternoons. The success of the course may well be measured by the notably large attendance at the final session, held at the time of the crucial game of the World Series.

The Fire Prevention and Control course consisted of talks by various experts well qualified in their line, including: J. M. Groby, A. D. T. fire prevention engineer; T. A. Fleming, National Board of Fire Underwriters; H. E. Magnuson, Factory Mutual Fire Insurance Company; P. C. Sharnock, N. E. Insurance Exchange, and Chief Sanborn. Motion pictures and slides were used, plus actual demonstrations of control valves, sprinklers, watch boxes and a first aid exhibition by members of the local Fire Department. The course was brought to a close during Fire Prevention Week.

Throughout the schools, a poster contest was sponsored by the Fire Department and the FHA. Prizes were awarded for the best Fire Prevention Week posters, and these being displayed at various points, attracting much attention.

During the week, also, the Boy Scouts were active in obtaining signatures on nearly ten thousand pledge cards signed by householders pledging their cooperation in eliminating the fire hazards in their homes.

Training for Public Service

During June of last year, discussions were held at a three-day conference at Princeton, N. J., regarding "Training for Public Service." Since then a report has been issued on this subject by Public Administration Service, Chicago, and sells for fifty cents.

It was the consensus of opinion of those participating in the discussions, that a new point of view was needed rather than new schools.

Of interest to fire department officials are the articles on "Current Programs of In-Service Training," by J. C. Wright, Vocational Division, U. S. Office of Education; "The Program of the New York Conference of Mayors," by A. H. Hall, Director of Research, and "Training Schools in Virginia," by Morton L. Wallerstein, Executive Secretary, Virginia League of Municipalities.

N. N. W.

Loud Speakers Help Protect Department Store

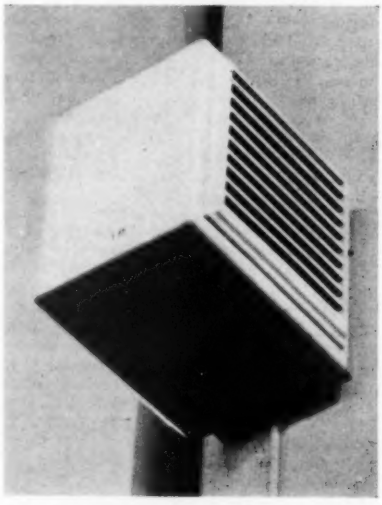
An interior broadcasting system is in operation throughout the Emporium Department Store in San Francisco, with microphone outlets on all selling floors, in executive offices, in important departments, and in the auditorium. Sixty-six loud speakers are installed.

This broadcasting system has two principal functions. For thirty minutes every morning, before the store is open to the public, the 1,700 employes are entertained, instructed and inspired while they go about their stock-keeping duties. At noonday and at mid-afternoon, musical programs are broadcast throughout the entire store, and are enjoyed by customers and employees. Programs are broadcast in the store-opening exercises in the morning and in the store closing ceremony at night.

Five minutes before closing time the announcer greets customers, thanks them for visting the store and invites shoppers to continue unhurriedly until all of their purchases have been completed. Musical chimes sound at 6 o'clock, followed by a bugle call, and recordings.

Particularly impressive is the fanfare broadcast as the doors are open to the public in the morning. Lights come up, employees takes their stations, and a bugle sounds.

In addition to those regularly scheduled programs, the broadcasting system is useful in a number of interesting ways, and offers possibilities for special occasions and emergencies. This system is believed of incalculable value in case of a fire or other major catastrophe. It is



Loud Speaker Mounted on a Column in the Store.

used to train employees to meet possible emergencies. After a recent fire drill, Chief Brennan, of the San Francisco Fire Department, talked to the 1,700 employees about fire protection, stressing the value of the store broadcasting system.

The broadcasting system was specially built by the Remler Company, Ltd., San Francisco, the equipment being of professional broadcast standard. The system can also be tuned in to outside stations, as it may be connected to the National Broadcasting studios.

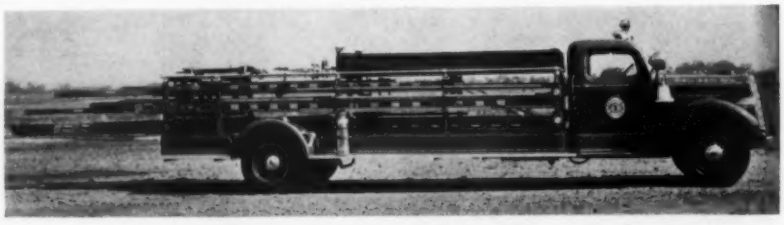
News events of great importance, national or international events may be broadcast immediately throughtout the store. Entertainment of night workers during the Christmas rush and of Holiday shoppers contribute to a festive atmosphere and increase the popularity of the store, which is the largest department store in Northern California.

C. W. GEIGER.

Lodge Talks to Chiefs

Henry Cabot Lodge, of Beverly, Mass., was the speaker at the meeting of the Fire Chiefs' Club of Massachusetts which was held on September 16 at the Parker House in Boston.

HARRY BELKNAP.



City Service Truck Delivered to Albertson, N. Y.

Mack Trucks, Inc., reports the delivery of a city service apparatus to Albertson, L. I., N. Y. The truck is provided with an enclosed cab.

A PARTIAL LIST OF ELKHART PRODUCTS

34 years service in the fire field

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Prompt service Quality products

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Shut-Off Nozzles
Controlling Nozzles
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Fire Department Extinguishers
Extinguisher Holders
Fire Truck Body Fittings
Hose House Equipment
All Types Hose Couplings
Sliding Poles, Railings and Canopies
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ELKHART BRASS MFG. CO.
ELKHART, INDIANA

Leapin' Lizards,
Gee Willikens,
Jumpin' Jupiter,
Oh, b' gosh,
For cryin' out loud

and other surprise expressions which will be made when you discover what the BI-LATERAL FIRE HOSE COMPANY, Chicago, Ill., will soon offer the trade.

B-K Fire Department INHALATOR

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For Fires in Oil, Gasoline, Lacquer, Alcohol, Solvents and Fires in Electrical Apparatus
LUX CARBON DIOXIDE FIRE EXTINGUISHERS

Walter Kidde & Company
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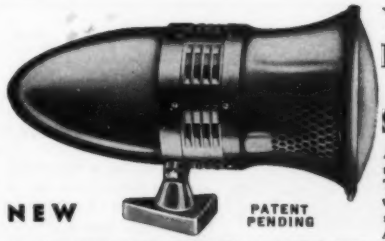

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A powerful siren and light combined. The most practical warning device for all apparatus. A precision built instrument, same sturdy construction as all Sterling Sirens. Write for bulletin.

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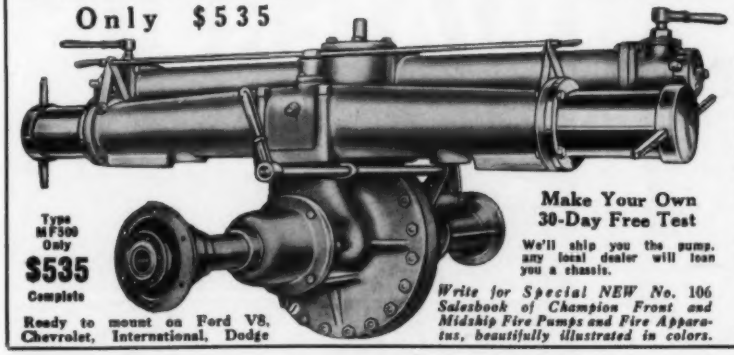
Only $535



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Ready to mount on Ford V8, Chevrolet, International, Dodge

Make Your Own 30-Day Free Test

We'll ship you the pump, any local dealer will loan you a chassis.

Write for Special NEW No. 106 Salesbook of Champion Front and Midship Fire Pumps and Fire Apparatus, beautifully illustrated in colors.

A totally new achievement in centrifugal Fire Pump design by Darley engineers.

Weighs only 375 lbs.—specially engineered and built for mounting on 1½-2 ton standard truck chassis without overloading.

Direct drive off chassis propeller shaft. No gears. Simple and dependable. Nothing to go wrong.

Unconditionally Guaranteed for 10 Years.

Meets all requirements of the Underwriters and all State Actuarial Bureaus for 500 GPM Fire Pumps. But actually delivers 600 GPM at suction and 800 GPM from fair hydrants. Automatic Vacuum Primer.

Easily installed without mutilating chassis. Pump fits into the space now occupied by short shaft which connects propeller shaft with transmission. Installation completed in an hour's time.

You can mount the new Champion Midship Fire Pump temporarily on a chassis and make your own tests. If the Champion does not perform fully to your expectations it can easily be removed from chassis and we want you to return it and we will send your money back.

Complete, ready to mount, with Gauges, Booster Valves, etc.

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A HEAP SAFER
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COVER'S DUPOR
Two-Sponge
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$24 Dozen
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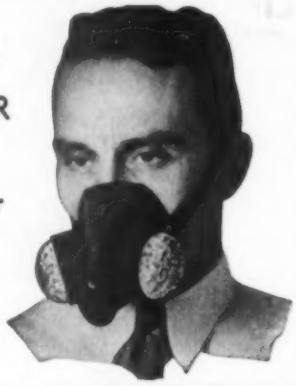

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The World's Newest and Safest
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Valued for its safety devices
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Wire, write or phone us if you are in need of equipment or supplies. We handle a very complete line and will be glad to supply you any item you need. We'll be glad to quote you prices on any item.
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Puts out chimney fires
Repeat orders prove its value!
minutes and a package of SOOT-BLAST, sprinkled over flames at base of chimney, will put out any chimney fire.
Try a case and see!
$4.50
per case
12-26 oz. packages
100-lb. bags
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THE TANNOSPRAY KIT, for fire department use, is the only self-contained TANNIC ACID unit that is entirely practical for emergency treatment of burns on the scene of the fire.
Non-technical, it can be operated correctly by the layman with fine results.
TANNIC ACID is recognized as being the only thoroughly scientific treatment for burns of both a major and minor nature.
Your post-card will bring complete literature, specifications, price information and other kindred data.
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COMFORTABLE AS YOUR OLD FELT HAT: WON'T SHAKE OFF
Never go to a fire without the protection of a good helmet. It may save your life.
DESIGN - - MATERIALS - - CONSTRUCTION
ALL PROVED RIGHT BY YEARS OF ACTUAL USE
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Fire Hydrants
Are given preference by so many fire protection and water works men because they know that more than half a century of experience go into their manufacture and they embody valuable and exclusive features.
Write for the Facts
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COMPRESSION
FIRE HYDRANTS
Waterous Dependable
ESTABLISHED 1886
WATEROUS COMPANY
SAINT PAUL, MINNESOTA

FALSE ALARMS

STILL ANGRY

A rookie, who was very slow in learning, was assigned to a ladder company that boasted of a Captain with a very caustic tongue. He became very provoked at the rookie for not carrying out some order. He gave the student a tongue lashing which, as the officer described to another, "The fellow will never forget."

The next morning the rookie passed the Captain by without saluting. For this the Captain called him back.

"Why didn't you salute me?" he asked the rookie.

The rookie, still thinking of the tongue lashing of the day before, replied, "I thought that you were still mad at me."

Many a man has been nailed by a pretty manicurist.

OPERATION AVERTED

A man of Williamsport, Pa., was out helping the firemen celebrate their convention. Filled with the cup that cheers, he walked into a hospital and said that he wanted an operation. Although his cheerful condition was noted, he was examined by internes, who discovered a hernia condition, and held him for the head physician to see the following morning. With the morning, the celebrant realized that he was in the wrong place, when a group of doctors in white approached his bed, and he made a hasty exit.

Success has turned more heads than halitosis.

EQUAL IN AREA

A volunteer fireman, on his trip to the big city, saw a fire station, and dropped in for a chat. He introduced himself, told of his department, and of some of the big fires that they had fought.

"About how big is your town?" he was asked.

"Oh, it's about as big as New York City, but it isn't built up yet."

She is only a lighthouse keeper's daughter, so the sailors pass her by.

SILENT RADIO

One evening Assistant Chief Duncan MacLean, Toronto, Ont., returned home with his family—in fact, it was rather early in the morning. When he went to turn on his radio, it wasn't there. Thieves had entered in his absence and had taken a large console radio.

Now's the time to go out on some good sprees. It's too near Christmas for the wife to scold.

MADE DAD MAD

It was only because of the friendship that the Chief had for the boy's father that prompted him to give consent to the boy enrolling at the drill school. There was always a fire fighter in the family, and the father had selected his son to follow the family custom.

But the boy could not become adjusted to the rigid training course of the department. And friendship or not, the boy was sent home.

It was a very much surprised drill master, when he saw the lad back in his customary place.

"So you're back," he growled. "I thought that I discharged you last week."

"You did," answered the boy, very much peeved. "But don't do it again, because my dad was plenty sore."

The slogan for a nice night's entertainment: So-fa and no-father.

WRONG MIND

"There goes the Commissioner," said the desk man to the reporter who had stopped for a chat. "He sure is broad-minded."

"Yeh," was the answer, "women have always been his trouble."

NOT REVEALING

Two firemen from different companies met up at headquarters and started to gossip about things in general and about the petty things that happen at the stations.

"That guy next to my cot," said one, "I wish he'd dry up. Every time he goes out on a party, I know about it. He talks most of the night in his sleep."

"That's just what's driving me nuts," remarked the other. "The guy next to me goes out with a swell dame, and I've been trying to get her address. But all that guy does after he has been out with her is to just smile in his sleep."

Radio has one thing in common with the boys up in the company room. Everybody tries to talk at one time.

DOLL THRILLS

A Boston policeman noticed a building on fire. He forced his way in. He heard what he thought was the cry of several infants. He looked around, but could find none.

Investigation he made showed that he was in a doll factory, that a shelf had collapsed, and that a number of dolls had fallen in an upside-down position. This set off the cry mechanism inside the dolls.

Here's to Salome, the first woman to discover the relation between gauze and effect.

CONFESSIONS

The orderly existence of the community was livened up a bit by the regular dances that were held at the fire hall. To these gatherings went all the young people from the surrounding communities.

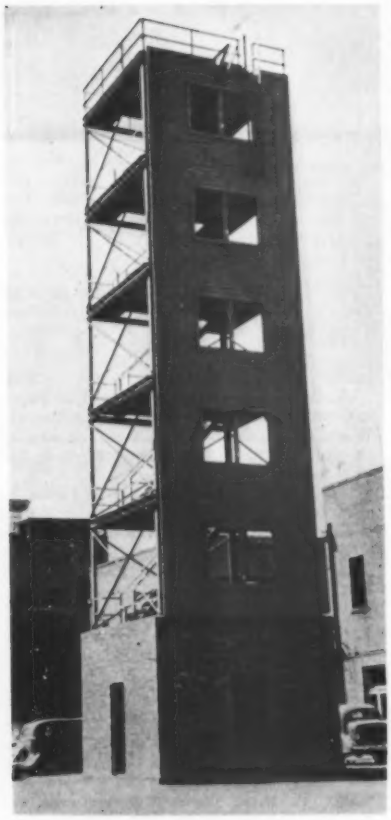
Out in a parked car, influenced a little by the girl and perhaps a whole lot by the moon, a young man confessed:

"I'll be frank with you. You're not the first girl I ever kissed."

She smiled sweetly. "And I'll be frank with you. You have a lot to learn."

Drawing by "Art" Espey

Fireman Shopper: "By golly, Mayor! If that sign hadn't of reminded me, the gang at 12's probably wouldn't of had no Thanksgiving turkey."



Six-Story Steel Drill Tower

New Station for Albuquerque

A two-story fire station, of Pueblo architecture, was recently completed at Albuquerque, N. M., and is known as Station No. 3. It has a three-story hose drying tower.

On the first floor are located the apparatus room, office, wash room and hose tower. On the second floor are the lounging room, dormitory, locker and wash room, and kitchen and dining room. There is a small basement at the rear under the apparatus floor, that houses the heating system and provides storage space.

The doors of the fire station are operated electrically. They open when an alarm is received and close shortly afterwards. The lights, too, are operated automatically.

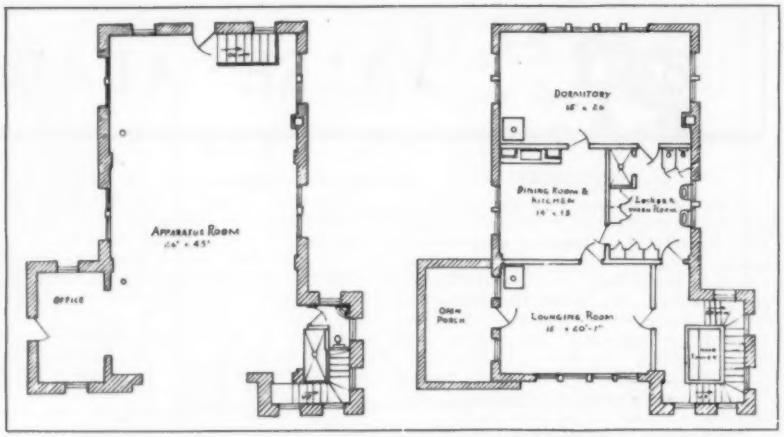
The building was erected as a WPA project. The plans were drawn by E. H. Blumenthal, architect, in accordance with suggestions made by Chief W. A. Westerfeld.

The city also erected a six-story steel drill tower.

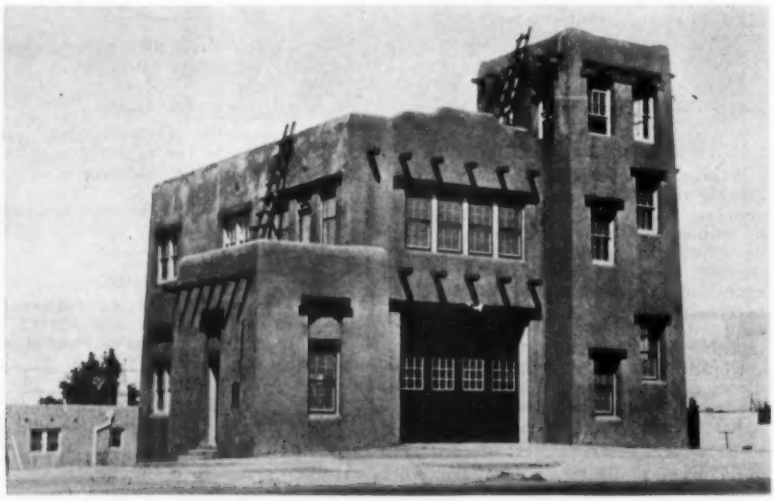
Ex-Chief Ordway Showered With Gifts

As a testimonial prior to his retirement on pension, Chief Orville O. Ordway, of the Reading, Mass., Fire Department, was presented with an easy chair, foot rest, magazine rack, floor lamp, and smoking set with a supply of pipes, cigars, and tobacco. Deputy Chief John P. O'Brien presided at the ceremonies which were held in the central fire station. The speakers were Newell H. Morton and J. Warren Killam, Jr., of the Reading Board of Selectmen, and Owen McKenney, oldest member of the Reading Fire Department.

HARRY BELKNAP.



Floor Plans of the Albuquerque, N. M., Station



Fire Station Recently Completed at Albuquerque, N. M.

Newark Dedicates New Fire-Police School

On October 6 the city of Newark, N. J., officially dedicated the new Police and Fire Academy at Eighteenth Avenue and Norwood Street. This academy will be used for training members of the fire and police force. The principal speaker at the dedication exercises were the Hon. John Edgar Hoover, of the U. S. Secret Service. Other speakers were Chris Hasselhuhn, President of the New Jersey State Firemen's Association, Mayor Ellenstein of Newark, N. J., and Michael P. Duffy, Director of Public Safety of Newark.

The school is installed in a large fire station which was built in one of the better residentials of Newark a couple of years ago and which was since closed, during the wave of economy. It is very well suited to school purposes, for it has a large lecture hall, chemical and ballastic laboratories, a full assortment of equipment used by the Fire and Police Departments, handball courts, gymnasium, and other necessary features.

Rhode Island Chiefs Hold Ladies' Night

The October meeting of the Fire Chiefs' Club of Rhode Island, and the first ladies night held by the association, took place at Providence on October 8, with Chief Frank Charlesworth of Providence presiding.

The club Chaplain, Rev. Norris T. Morton, participated in the memorial services, held for those members who died since October 1, 1935.

Capts. Norman Jones and Frank Eddredge, Providence Fire Department, gave a demonstration with the aid of working models and chemicals, of how fires are started and how they may be prevented.

Juvenile performers, presented by radio station WPRO, Providence, entertained the two hundred persons who were present.

A. ROBERT BLACK.

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Covers all your first aid requirements

THE M.S.A. Type D First Aid System includes treatments for every kind of injury, packaged uniformly and arranged in orderly, systematic Kits for quicker access, easier application and simpler renewal when used. ● *The 36-unit water and dustproof Kit illustrated meets the specifications of, and is approved by the Fire Department Instructors' Conference. A 24-unit Kit also is available, and other First Aid Materials, Stretcher Outfits, etc., to meet every Fire Department need.* Let us quote on your requirements.

MINE SAFETY APPLIANCES CO.
Braddock, Thomas and Meade Sts., Pittsburgh, Pa.
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M. S. A. Products include Breathing Apparatus . . . Inhalators . . . Comfo Respirators . . . Masks of all Types . . . Gas Indicators . . . Gas Detectors . . . Safety Goggles . . . Protective Hats and Caps . . . Edison Electric Cap Lamps . . . Safety Clothing . . . First Aid Equipment . . .
Descriptive Bulletins will be sent on request.

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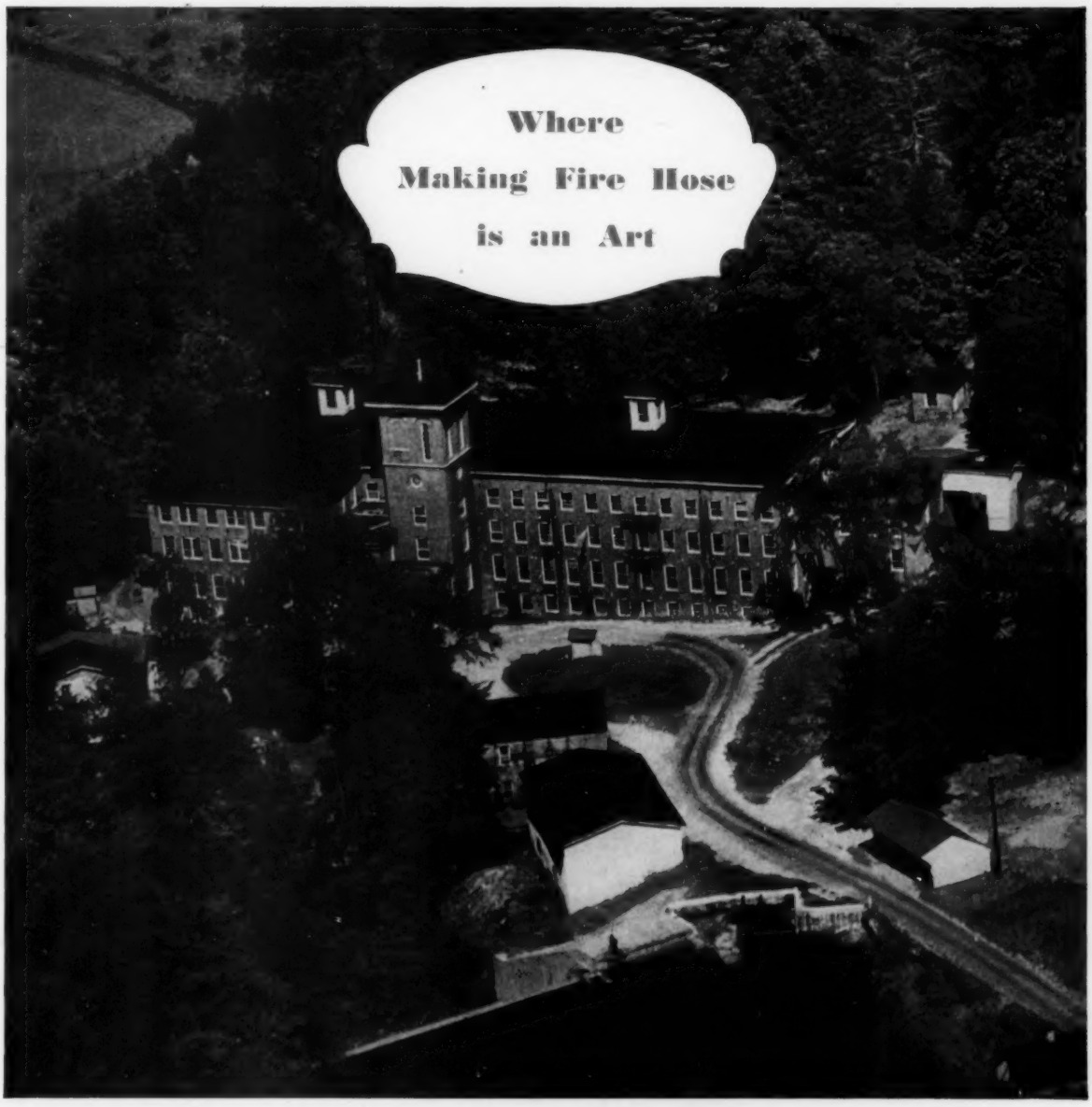

Aerial photograph of our factory at Sandy Hook, Connecticut, the only plant in the United States making municipal fire hose exclusively. Genuine Wax and Gum Treated Cotton Rubber Lined Fire Hose has been our specialty for fifty-five years.

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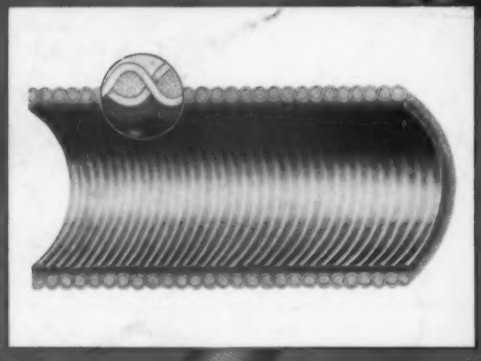
stream'line', *adj.* Of or pert. to a streamline; designating a motion or flow that is free from turbulence, like that of a free particle moving in a streamline; hence, *Mech.*, designating a surface, body, etc., designed to afford an unbroken flow of a fluid ..... esp. when the resistance to flow is the least possible.

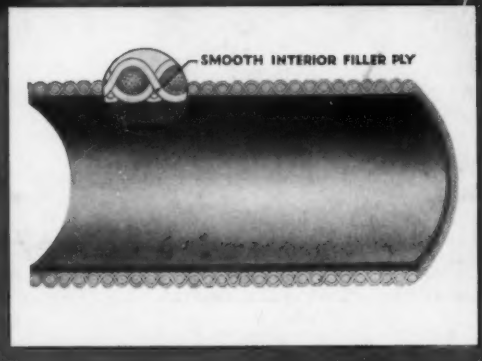
To give a more powerful fire-fighting stream, all brands of Eureka Fire Hose are now "Streamlined."

This is accomplished through two exclusive Eureka developments, namely the Smooth-Interior Filler-Ply and an Improved Lap-Seam Rubber Lining.

Call in a Eureka representative. He will explain not only the advantages of "Streamlining" but also Eureka mildew proofing and new long-lived rubber lining and what they mean in the way of longer, more satisfactory service.



This shows how the rubber lining of ordinary fire hose recedes into the valleys of the inner jacket when subjected to hydraulic pressure, giving the waterway a washboard effect, which results in excessive friction loss.



In Eureka "Streamlined" Fire Hose, the Smooth-Interior Filler-Ply Cord fills the valleys and eliminates the possibility of "washboarding." Eureka Smooth-Interior Filler-Ply Feature reduces friction loss to a minimum.

EUREKA FIRE HOSE

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